

# MIND

A QUARTERLY REVIEW  
OF  
PSYCHOLOGY AND PHILOSOPHY

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## I.—FIFTY YEARS OF “MIND”.

By W. R. SORLEY.

It may be well that the Presidential Address on this occasion<sup>1</sup> should not be devoted to a particular philosophical problem but should be of a more general character. Something in the nature of a retrospect seems called for. For MIND, the first English journal of philosophy, has now completed fifty years of life, and we are naturally led to think of its beginnings and of what it has achieved. The journal is nearly twice as old as the Association which is concerned with its character and financial stability. The Mind Association was formed in 1900 to take over the journal as a going concern from the representatives of the late Henry Sidgwick, who had been responsible for it for nine years; and he had taken it over from Alexander Bain to whose public spirit the whole enterprise was due. Bain was of course the leading representative of the traditional English psychology and of the philosophy connected with it. But MIND was never the organ of a school; from the first its pages were open to opinions of all kinds provided they were reasoned and well-informed; no party advantage was looked for, except such as might come to the party whose creed was founded on reason. Nor was there any commercial profit in prospect; it was only very slowly that MIND made its way with the book-buying public, gradually reducing the loss on each number; in the sixteen years of his ownership it cost Bain some £3000. We do well to remember that MIND owes its existence to the generosity as well as the public spirit of an Aberdonian professor. In

<sup>1</sup>Delivered at the opening of the Joint Session of the Mind Association and Aristotelian Society, at Trinity College, Cambridge, 2nd July, 1926.

the words of the Editor who was so closely associated with him, "An English psychologist of the traditional stamp was the first to project, and has ever been there to sustain, a Review open to all the serious philosophical thought of the country and seeking new lights from the whole world around."<sup>1</sup>

To Bain and the editor whom he selected, George Croom Robertson, the plan of the new journal was due. It would be difficult to imagine a more perfect editor than Croom Robertson ; and on this occasion, thirty-four years after his death, it may be permissible to say something about him. He was a pupil of Bain's and in general agreement with his type of philosophy ; but he had a wide knowledge of and sympathy with different lines of thought, scientific and speculative. His own thinking never hardened into a groove ; he was always eagerly receptive and yet keenly critical of new ideas. I did not know him until a cruel disease had marked him as its own ; but I can see him now, alert and eager as a boy, welcoming his friends and their views on all subjects under heaven, interested and candid and with a passion for accuracy. No theme was too great for him or too small ; his business was with the big things, but the little were also under his control and he could reduce to a fine art the writing of post-cards or the placing of commas. These qualities served him well as an editor ; he knew what his contributors were about—could often have done their work better than they did it themselves ; and he gave minute care to revising what they had written. It is certain that the time and energy which he expended on making *MIND* as good as it possibly could be left English philosophy poorer by the loss of the original work which he had himself contemplated. But it was not his way to do things by halves ; and, when he became editor, he placed all his powers at the service of his journal. His career and his position had given him a wide acquaintance with contemporary movements of thought and with the men who led them, and he was able to surround himself with a representative body of contributors ; but he also decided that *MIND* must be a model journal for accuracy and business-like qualities, and this, as he knew, required that the editor should keep a watchful eye over every stage of its production. I think his care was successful ; at least, I have yet to discover a misprint in the sixteen volumes of the Old Series.

Croom Robertson, however, was not altogether satisfied with the result of his labours. In two respects he felt that

<sup>1</sup> G. C. Robertson, *MIND*, O.S., xvi., 557.

MIND had fallen short of his expectations. One of these respects was its contribution to psychology. In the Prefatory Words which open his first volume, he wrote as follows: "Philosophical thought in England has for the most part been based on psychology, when not wholly merged in it; and psychology, pursued as a positive science, ought to yield a continuous harvest of results, coherent among themselves and standing in relation with other results gathered in the scientific field. That psychology has not been unfruitful is the conviction of all those who continue to cultivate it upon the lines of the past—with new lights, it may be, but still upon the old tracks. Few, however, of its cultivators will deny that it has been far from as fruitful as could be wished, and even the most ardent must admit that it has by no means won the rank of an assured science in the common esteem. Now, if there were a journal that set itself to record all advances in psychology, and gave encouragement to special researches by its readiness to publish them, the uncertainty hanging over the subject could hardly fail to be dispelled. Either psychology would in time pass with general consent into the company of the sciences, or the hollowness of its pretensions would be plainly revealed. Nothing less, in fact, is aimed at in the publication of MIND than to procure a decision of this question as to the scientific standing of psychology." Seven years afterwards he expressed his "disappointment that there has not been more of positive contribution to psychological science in its pages. . . . The Journal has not yet succeeded in fostering—if it might have been expected to foster—such habits of specialised investigation in psychology, as are characteristic of the workers in other departments of science." The disappointment, it would seem, hardly concerned the point on which he had at first laid emphasis—"the scientific standing of psychology." That had been pretty well vindicated in the interval and had come to be recognised by nearly all psychologists and by most philosophers, although there was no general agreement—as indeed there is none to-day—regarding the fundamental concepts of the science. Perhaps the general conviction of the scientific status of psychology was not, to any very great extent, due to work published in MIND. But what the Editor regretted was that there had been so little to record of results obtained by psychological research. Psychological laboratories had been established in Germany, beginning with that at Leipsic in 1879; but as yet none existed in this country. Croom Robertson had an eager interest in this experimental work, as is shown by the (perhaps excessive)

enthusiasm with which not long afterwards he greeted the first publications of Münsterberg.

When, nine years afterwards, the Editor bade farewell to MIND and its readers, he expressed a modified satisfaction with the record of psychological work which, in these later years, had appeared in its pages. But he had another matter of regret. "The retiring Editor," he said, "has had no greater disappointment during the past sixteen years, than in his failure to attach to the service of the review more than a few of those in this country whose regular business is with philosophy." Doubtless his disappointment was not altogether groundless, but I think that it was greater than it need have been. On the philosophical side, it cannot be expected that the journal should have the same relative importance as compared with the book as it has in the sciences. The view of the whole which distinguishes philosophy does not easily express itself within the compass of an article, and it is apt to colour even the discussion of particular problems. The book is not going to be ousted by the journal—in philosophy, as it has to a large extent been in science. And the professional philosopher may be pardoned if, devoted to his book, he has been a little slow to recognise the importance of the journal as a place for the discussion of special problems and a centre for the exchange of ideas. Making due allowance for this consideration, I should rather stress the success of Croom Robertson's efforts than marvel at the disappointment of a man not to be satisfied by anything short of perfection. Even the first volume of MIND contains articles by such well-known writers (most of them 'professionals') as Bain, Herbert Spencer, G. H. Lewes, Sigdwick, Sully, Flint, Adamson, Venn, James Ward, J. A. Stewart, and F. Pollock—of whom the two last-named alone survive its jubilee. Soon afterwards the Editor gathered into his fold Edward Caird, Green, and Bradley. Practically all the great names of English philosophy at the time were on his list. And it is worth while recording that the early portion (about one quarter of the whole) of Green's *Prolegomena to Ethics* originally appeared in MIND in 1882 in a series of articles entitled 'Can there be a Natural Science of man?' Looking merely at what was accomplished in this way, we may well agree with Leslie Stephen that "few men, if any, have done so much in their generation to promote a serious study of philosophy in England"<sup>1</sup> as Croom Robertson.

Strong evidence of the first editor's good judgment and

<sup>1</sup> Quoted by Bain, MIND, N.S., ii., 14.

foresight is provided by the fact that MIND has preserved its uniformity of type during fifty years. The distribution of the contents of each number into articles, discussions, critical notices of books, shorter reviews, and descriptive accounts of important contributions to other philosophical journals has remained unchanged.

I think it will be admitted also that, during the whole of its fifty years, MIND has reflected faithfully or else contained the main currents of English philosophical thought. The completeness with which it has done so may indeed have varied from time to time. The publication of the Proceedings of the Aristotelian Society from 1887 to 1896 and afterwards in greater detail from 1900 onwards has come to share the work with it, while the foundation of the British Journal of Psychology has relieved it by providing an appropriate means of publishing the increasing contributions to scientific psychology. It would seem, one must admit, that the representatives of the current Idealism were slower in giving their support to MIND than were the followers of other schools of thought. But it was not long before they joined in the fray. Perhaps Bradley had not a little to do with this. His genius for provoking and conducting controversy led to spirited contests first with Sidgwick, afterwards with Ward, and later on with the supporters of Pragmatism and of the New Realism. Yet I suppose it is true that the first few years of MIND do not adequately reflect what was yet the fact that the type of thought inspired by Kant and Hegel was at the time among the most living forces in English philosophy. It had attracted a number of the most distinguished teachers and in some of the universities had captured the ablest students. It is astonishing that in the first number of MIND, in an article on Philosophy at Oxford, Mark Pattison could speak of "the present stagnation of philosophical thought among us."<sup>1</sup> This at a time when Green and Wallace and Nettleship were lecturing in the University, when Green's *Introduction to Hume* and Wallace's *Logic of Hegel* had already appeared, and when Bradley's *Ethical Studies* was on the eve of publication! But Mark Pattison's judgment was warped by the violent anti-clericalism of the unclerical cleric; he suspected Green of being on the side of the "black-coated gentry" and would not tolerate either him or his sympathisers.

Fifty years of English philosophy can be read in the volumes of MIND. We can see new views emerging, expressed confidently, perhaps even stridently, at first, attacked and defended,

<sup>1</sup> MIND, O.S., i., 86.

and then falling into correct perspective or even fading out of sight. The idealism of a Neo-Hegelian type is at first making its way by means of criticism of the dominant conception of evolution as applied to philosophical problems. It is not content with the purely critical attitude of Sidgwick, and gradually the pages of *MIND* become filled with its constructive efforts. There is a complaint, indeed, that "the young bloods" are "critical rather than constructive. They evolve no systems. They suggest that system-making is not consistent with sobriety of thought, and they confine themselves to analysis, the exposition of difficulties and polemic."<sup>1</sup> The rift within the lute widens when it is found, after the publication of *Appearance and Reality*, that Bradley has been all along preaching another gospel than that of Green and Caird. The controversy within the school, and between the school and its critics, cannot be said to have been settled; but at least it has straightened itself out. And, all through it, McTaggart by his own severe method was examining the Hegelian system from within, till the structure fell to pieces in his hands and he had to build a new system of his own out of the fragments.

We may also read in *MIND* a good deal of the rise and subsequent fortunes of the two theories which have attracted the greatest amount of interest in the present century—the theories of Pragmatism and of the New Realism.

There is no record in *MIND* of the paper by C. S. Peirce which led to William James's elaboration of the theory of Pragmatism—a theory of which he himself claimed to be the godfather only, not the parent. But the pages of *MIND* contain some record of the ferment which was going on in James's own thought. In 1879 he criticised the conscious-automaton theory of Huxley and Clifford and defended the efficiency of consciousness by pointing to its utility: "the mind is at every stage a theatre of simultaneous possibilities. Consciousness consists in the comparison of these with each other, the selection of some, and the suppression of the rest." It "produces nothing, it only alters the possibilities."<sup>2</sup> Ten years later, in an article on the Psychology of Belief, he asserted that "the whole distinction of real and unreal, the whole psychology of belief, disbelief and doubt, is thus grounded on two mental facts, first, that we are liable to think differently of the same, and second, that when we have done so, we can choose which way of thinking to adhere to

<sup>1</sup> H. Jones, *MIND*, N.S., ii., 289.

<sup>2</sup> *MIND*, N.S., iv., 3, 13, 14.

and which to disregard."<sup>1</sup> It was eight years after this that the volume of essays called *The Will to Believe* was published, and the writer who became the English protagonist of the new doctrine welcomed it in *MIND* with a note at once of triumph and of relief: "there are not any eternal and non-human truths to prohibit us from adopting the beliefs we mean to live by . . . 'Pure' science, in short, is pure bosh, if by purity be meant abstraction from all human purposes and freedom from all emotional interest."<sup>2</sup> It is clear that a certain ethical interest led to the new view. In his article of 1879 James had urged that the automaton theory of Huxley was not based upon any definite proof but was due to a certain "aesthetic demand" or "philosophic faith"—the demand for, the faith in, unity. He decided for himself to exercise a similar faith, to make a similar demand, for an ethical interest, an interest which seemed to imply a philosophical Pluralism. James was a rapid, and sometimes in appearance a headlong, thinker; but he took twenty years in passing from the expressions of this early paper to the doctrine of truth as consisting in practical results which he definitely formulated for the first time in his discourse on *Philosophical Conceptions and Practical Results* published by the University of California; and the way in which he formulated it was due to Peirce's analysis of the conception of an object into the conception of its effects of a conceivably practical kind.

From 1900 onwards for several years there was a constant rain of books and articles on the theory thus promulgated; and *MIND* took its full share both in attack and in exposition and defence. It would be incorrect to say that the controversy has been settled, but it has at least diminished both in volume and in intensity. Perhaps both the hopes with which it was started, and the fears with which it was received, have proved to have been exaggerated.

The New Realism was a rather later development and the publications which contributed to it appeared in various places, but it was from an article in *MIND*, in 1906, that it seems to have derived its name.<sup>3</sup> It was not till 1910, however, and in America, that the term was adopted as a party appellation by a syndicate of philosophers who published a volume with the title *The New Realism*. In this book the doctrine was definitely formulated, with a "programme" and a "platform." In old days, on a famous occasion, three strong men were enough to hold a bridge. But to defend this platform six

<sup>1</sup> *MIND*, O.S., xiv., 327-328.

<sup>2</sup> *Ibid.*, N.S., vi., 548.

<sup>3</sup> *The New Realism and the Old Idealism*, by J. S. Mackenzie, *MIND*, N.S., xv., 308.

champions were required. They made a great stir at the time, and their definite contentions cleared the air of a good deal of vagueness. It seems to me that the central and most significant thing about the programme was that it was a protest against any form of psychological philosophy. Knowing cannot in any way modify the object of knowledge. Knowledge is simply a relation between one term (mind or body) and another term (the object); all relations are external to their terms; it doesn't matter to the object whether it is known or not; experiencing makes no difference to the facts. The controversy which followed this pronouncement is too familiar for me to dwell upon it; almost all those present here to-night must have taken part in it. The discussion was prominent in the pages of *MIND*, though it may have been even more fully represented in the debates of the Aristotelian Society, whence it passed into their *Proceedings*. So far as concerns the problem of external perception, the doctrine was a precisely defined re-statement of Natural Realism; its genuine novelty consists in the way in which it is derived from or connected with the view of terms and relations: so that it will apply equally to knowledge of any kind whether perceptual or conceptual. And therefore I cannot think that I am wrong in tracing the origin of the doctrine to an article on Judgment which appeared in 1899 in *MIND* and was written by the present Editor. What the New Realist said of objects, he had already said of concepts: "It is indifferent to their nature whether anybody thinks them or not. They are incapable of change; and the relation into which they enter with the knowing subject implies no action or reaction."<sup>1</sup> And this implies all and more than all for which the New Realists came to contend. For "it is necessary, then, to regard the world as formed of concepts. These are the only objects of knowledge. They cannot be regarded fundamentally as abstractions either from things or from ideas; since both alike can, if anything is to be true of them, be composed of nothing but concepts."<sup>2</sup>

This doctrine is connected with another characteristic of still deeper significance which distinguishes the philosophical thought of recent years from that which was in the ascendant fifty years ago. In the latter half of last century biology occupied the centre of interest among the sciences, and its conceptions and methods came to be used with confidence in the explanation of reality as a whole. Of course there was criticism of these attempts: they did not allow for the radical

<sup>1</sup> *MIND*, N.S., viii., 182.

<sup>2</sup> *Ibid.*, viii., 183.

difference between the explanation of particular processes and the understanding either of the concepts assumed in the special sciences or of the ultimate nature of things. All the same, the influence of biology was welcomed by many philosophers as a liberating influence from the narrowness of mechanical conceptions and as involving a recognition of the place of life and mind in reality: at least it supplanted a more abstract by a more concrete view.

The development of thought in the last twenty years or so seems to have reversed this tendency, and the later volumes of *MIND* give evidence of the new trend. Mathematics is being re-instated in the dominant position which it occupied with Descartes and his successors. We seem to have entered upon a new mathematical era. And by this I do not mean that the mathematics itself is new (although this is the case), but that mathematics is held to give the clue to reality and to discover its nature—so far as that nature can be discovered. Now if it be recognised that the entities with which mathematics deals—numbers, points, or whatever they be—are abstractions from reality and fall short of it, are not real in themselves but only in the context from which they have been abstracted, then mathematical treatment must remain an inadequate guide towards the understanding of the concrete nature of reality; mathematics will not be philosophy, nor its method the method of philosophy. If on the other hand the concepts used by mathematics "cannot be regarded fundamentally as abstractions either from things or from ideas," if "to exist is merely to stand in a certain logical connexion,"<sup>1</sup> and if "in the end the concept turns out to be the only substantive or subject,"<sup>2</sup> then the ideal of philosophy, equally with the ideal of physics, will be expression in mathematical formulae. How far these hypothetical statements would now be adopted I am unaware; but it seems at least probable that their assertion has contributed to the restored influence of mathematical ways of thinking upon philosophy, which is one of the most significant characteristics of recent thought.

In this retrospect I have been content to describe some salient features of our Journal and of the contributions to philosophy which it records. I have not attempted criticism: for which the time at my disposal would not have sufficed and for which the topics have been too varied. But perhaps I may conclude with a practical suggestion. In turning over these fifty volumes I have often been attracted by the contents of an article review or discussion and have spent

<sup>1</sup> G. E. Moore, *MIND*, N.S., viii., 183.

<sup>2</sup> *Ibid.*, viii., 193.

a good deal of time on it, not without profit to myself, though the subject had no bearing on the topics of this address. I have been impressed by the amount of valuable matter which is hidden in these 29,000 pages—or at least to which there is no nearer clue than the titles of the articles and other contributions given in the index. Would it not be possible to make these discussions available by a subject-index of a fuller kind—one which would include not merely titles but a record of the subjects and problems actually discussed? The MIND Association is full of energy, and its funds are not depleted. Could its means be better employed than for this object, and are there ardent spirits among us who are willing to devote themselves to the task of indexing?

## II.—FORMS AND NUMBERS: A STUDY IN PLATONIC METAPHYSICS (I).<sup>1</sup>

BY A. E. TAYLOR.

We all know the famous chapter in Aristotle's *Metaphysics* (A 6) where Aristotle sums up the Platonic doctrine about the *ἀρχαὶ* and calls attention to its points of disagreement with Pythagoreanism. As all my readers will, doubtless, recollect, Aristotle holds that the differences between the otherwise very similar doctrines are two: (1) the Pythagoreans say that the constituents of number are the unlimited (*ἄπειρον*) and limit (*πέρας*), Plato that they are "the one" and the "great-and-small," or, as it is alternatively called, the "indeterminate duality" (*ἀόριστος δύας*). (There are really two points of difference here; the one, which, as we know from other passages, was regarded by the Pythagoreans as derivative, being the simplest "blend" of their *ἀρχαὶ*, *πέρας* and the *ἄπειρον*, appears in the Platonic version as itself one of the underived "constituents" of number, the "formal" constituent, as Aristotle calls it; the other, or "material" constituent is a duality of some kind.) Aristotle's language (*Met.*, A 987, b. 25) shows that this is the peculiarity which strikes him as specially remarkable. (2) Though both parties agree that things are somehow made of numbers, the Pythagoreans simply identify these numbers with the things we perceive by our senses: Plato distinguishes the two, and further interposes an intermediate class of "mathematical objects" (*μαθηματικά*) between them.

It is obvious, as all the best recent scholars have seen, that Aristotle is not talking here about anything of the nature of a "senile aberration". He identifies this doctrine unreservedly with the teaching of Plato, and this must mean that no other

<sup>1</sup> With the whole of what follows I must ask my reader to compare Milhaud, *Les Philosophes-Géomètres de la Grèce*, Bk. I, c. 2, Bk. II., cc. 4, 5; Burnet, *Greek Philosophy*, Part I., 320-324; Stenzel, *Zahl und Gestalt bei Platon und Aristoteles*. I have to apologise for repeating much which is common property, but it is necessary to do so, if I am to make it quite clear exactly where these writers seem to me to have stopped short of what seems the precise truth.

"Platonic theory" was known in the Academy all through the twenty years between Aristotle's entrance there and Plato's death. If he has not explained what the formula means more fully, the reason must be that he believed himself and the contemporaries for whom he was discoursing to understand its sense without any explanation on his part.

Naturally enough, the meaning is not so obvious to us, who have to rely for our knowledge of Plato's teaching in the Academy on chance observations of Aristotle himself eking out by a very few statements of contemporary Academics preserved by his later commentators. It does not follow that the true interpretation cannot be recovered with pains and industry. In fact, my object in this paper is to show that three recent scholars, M. Milhaud in his *Philosophes-Géomètres de la Grèce* (1900), Prof. Burnet in *Early Greek Philosophy, Part I.* (1914), and Dr. Julius Stenzel in his important recent work, *Zahl und Gestalt bei Platon und Aristoteles* (1924), have been, as the children say, very "warm" in their search for the key to the puzzle. But I believe none of them has ever quite tracked down the quarry, probably because none of them has adequately interpreted the one passage in Plato which is more nearly than any other the explanation, *Epinomis*, 990c, 5—991b, 4. M. Milhaud ignores this important page altogether, except for the passing citation of a single phrase, presumably on the ground that it comes from a "spurious" dialogue. Prof. Burnet makes some use of the first half of it (*op. cit.*, p. 322); Dr. Stenzel, with a sound perception of its importance, quotes and comments on nearly the whole of it (*op. cit.*, 91 ff.) and would, I believe, have given the full interpretation, but for the want of mathematical knowledge which he candidly confesses in his *Preface*. Yet the mathematics required for complete understanding of the whole are really very elementary; if they were not, I should not venture to attempt the solution which I now propose to students of Plato for their judgment and censure.

I must make a beginning with the familiar passage of Aristotle. The thing which strikes him as singular is not simply that Plato, like the Pythagoreans, should have attempted a derivation of numbers from two components, but that he should have made one of these components, the one which Aristotle calls in his own terminology the "matter" of numbers, a duality, and that this duality should have been a "great and small". And quite clearly this is the point from which investigation should start. Why was Plato dissatisfied with the simpler statement that the "matter" of number is an *ἀπειρον*? And again why, if it is to be a couple of some

kind, is it a couple of the *great* and *small*? If we could only identify the particular problems which have suggested the general formula, we might be able to answer these questions. In the light of the passage from the *Epinomis* it is possible, I believe, to identify the problem or problems almost beyond a doubt, and thus to penetrate to Plato's meaning by reconstructing a piece of mathematical history.

Before I proceed further, however, I must mention two explanations which I feel bound to dismiss as insufficient, though on the right lines, so far as they go. It is quite insufficient to say, in the well-known words of Plato's disciple, Hermodorus (*Simplicius in Physica*, 247, Diels; *Greek Philosophy, Part I*, 330) that "those things which are spoken of as having the relation of great to small, all have the 'more and less,' so that they can go on to infinity in the direction of the 'still greater' and the 'still less.'" This may explain why an *ἀπειρον* may be called a duality; it does not explain why it *must* be called so. The point is made in so many words in the *Philebus* (24 a ff.) where Plato is careful to make Socrates work with the old Pythagorean antithesis of the *ἀπειρον* and *πέρας*; if it were all that is meant, there seems no reason why Plato should have made any modification in the formula, or why, if he had done so, Aristotle should not dismiss the change, as he does the substitution of the word *μέθεξις* for *μίμησις*, as a mere change of language. Also, the remark throws no light on a point on which Milhaud, Burnet and Stenzel are all, rightly as we shall see, agreed, that the Platonic formula is somehow connected with the doctrine of "irrational" numbers. If there were no numbers but the rationals, it would still be true, as Hermodorus says, that there can be an infinity of *e.g.* lengths greater and again smaller than a given length, of notes "sharper" or "flatter" than a given tone. Hermodorus may, no doubt, have known that his words do not give the full explanation of the Platonic doctrine. It is quite possible that he went on to explain further, but if he did, Simplicius must have cut his excerpt short before reaching the principal point, and that is hardly likely in a man of his intelligence. Or Hermodorus may not have thought fit to say all he could have said. He has certainly not told us all we want to know before we can see why Plato should have been dissatisfied with the Pythagorean formula.

Again, when Milhaud, Burnet, Stenzel, all look for the explanation of the formula in the conception of the value of an "irrational" by successive approximations to a "limit," they are plainly on the right track, as the passage of the *Epinomis* we have to deal with shortly demonstrates. Their

explanation comes much nearer being the whole truth than the remarks quoted from Hermodorus by Simplicius. Yet it is not the whole of the truth. The thought of "convergence to a limit," important as it is, does not really explain why it should be necessary to replace the *ἀπειρον* by a "duality" and why the "duality" should be a "great and small." An example or two will make this clear. Consider the series 1,  $1/2$ ,  $1/4$ ,  $1/8$  . . .  $1/2^n$ . . . . We see at once that the series "converges to the limit" 0, since, by taking  $n$  large enough we can make the difference  $1/2^n - 0$  less than any assigned rational fraction  $\sigma$ , however small. But though the endless sequence of the terms is a good example of an *ἀπειρον*, it is not clear how it can be an example of a "great-and-small". Since each term is one-half the preceding term, the series proceeds in a single direction, that of "the small" or "defect." Now consider the series formed by taking the sums of 1, 2, 3 . . .  $n$  . . . terms of our first series, 1,  $1 + 1/2$ ,  $1 + 1/2 + 1/4$ , . . .  $1 + 1/2 + 1/4 + \dots + 1/2^n$ . . . . This again "converges to the limit" 2, as we all know. But again, the series proceeds in a single sense. Each term,  $3/2$ ,  $7/4$  . . . is greater than the preceding. Thus our series is emphatically not a "great and small." The inevitable inference is that when Plato replaced the Pythagorean *ἀπειρον* by the "duality" of the "great and small," he was thinking of a specific way of constructing infinite convergent series which his interpreters seem not to have identified. I propose to show what the method was, by indicating the precise problem from which Plato was starting.

What the problem was we are all but told in so many words in the *Epinomis*, to which we must now turn. (It is irrelevant for the immediate purpose to enter into a discussion of the authenticity of the dialogue, though I may confess here my own conviction that it is genuine and is an integral part of the *Laws*. Those who have adopted, on the slenderest of grounds, the ascription to Philippus of Opus at least recognise that the author is an immediate scholar of Plato, specially competent in mathematical matters, and that the work was issued from the first along with the *Laws*. Even so much is sufficient ground for holding that we may accept the matter of a mathematical passage from the dialogue as genuinely Platonic with reasonable confidence. If our exegesis should make it appear that the passage actually gives the clue to Plato's language about the "great and small," then, I submit, reasonable confidence passes into complete assurance. Incidentally also, such a result would, I take it, put the authenticity of the dialogue beyond question. That a "stylometrist"

already determined to bring out a different result, examining the few pages of the dialogue under the microscope, should succeed in detecting some small peculiarities of the diction, as compared with that of *Laws* I-XII, would prove nothing on the other side. If any slight departure from a stylometric average is proof of spuriousness, what single page of any author is safe from the first critic who has his reasons for wishing to get rid of it?

I come then to the critical passage of the *Epinomis*. We must begin by recalling the context in which it is set. The ostensible purpose of the whole dialogue is to answer the question what scientific studies are indispensable in a member of the "nocturnal council," the standing Committee of Public Safety, as we might call it, which watches over the general well-being of the community of the *Laws*. We are first told that the maintenance of a high standard of public piety will be the first concern of this council. That piety may be wholesome and rational, the Olympians are to be replaced as the primary objects of the public cultus by the heavenly bodies, the "great works" which, by the strict conformity of their apparently mazy dance to mathematical law, most specially declare the wisdom of the Creator. The fundamental business of the authorities who enforce this cult of the host of heaven is to impress it on men's minds that the heavenly bodies are not capricious creatures, like the fabled Olympians, but move in accord with law. And to satisfy men of this, it is necessary to ascertain the rhythmic periods of the movements of each "planet" and express them in terms of the period of any other. Consequently, the members of the council must not only be astronomers, they must also be thoroughly versed in all the preliminary knowledge which the astronomer will need for the execution of the task just mentioned. (Thus, exactly as in the *Republic*, before we come to astronomy itself we are conducted through the stages of a preliminary mathematical training. But there is this difference between the *Republic* and the *Epinomis*—it is just the difference between the mathematical science of the age of Socrates and that which Plato, with the work of Eudoxus and Theaetetus before him, was hoping to inaugurate—that, whereas the *Republic* specifies three preliminary sciences, arithmetic, plane geometry, solid geometry, the *Epinomis* introduces a new and extended conception of number which has the effect of bringing the whole of the prolegomena to kinematics under the single head of arithmetic. Arithmetic, as now conceived, is the whole of what is strictly science in the "pure" mathematics.)

The speaker now proceeds to develop his views in a page which defies all formal grammar, probably not so much because it is badly "corrupted," though there are one or two points at which we are tempted to emend—as because the syntax is that of thought, and the words have never been subjected to revision with a view to circulation. If they are notes of Plato, "transcribed from the wax" with scrupulous piety after his death, this is intelligible; it is harder to understand, if they were deliberately set down by any one who meant them to be read as they stand. To avoid unnecessary prolixity, I will therefore merely give such a résumé of the general sense as remains unaffected, whatever view we take of the text and grammar of the various clauses. We shall need, he says, various *μαθήματα*, first one which deals with numbers simply as numbers (*αὐτοὶ ἀριθμοὶ*), not as embodied in anything, and studies the "generation of the odd and even" and the character (*δύναμις*) they impart to nature (990 c, 5-8). Next we must study what has been very ludicrously called "mensuration" (*γεωμετρία*), but is really an art which assimilates to one another numbers which are not similar in their own nature, by reference to surfaces (or areas.) This art is a more than human miracle in the eyes of those who can appreciate it (990d, 1-6.) Then comes another art which deals with numbers "raised to the third power and similar to volumes" (*τοὺς τρὶς ηὔημένους καὶ τὴ στερεὰ φύσει ὁμοίους*), and once more makes similar a second class of numbers not naturally similar. This is what the inventors who first hit on it called "gauging" (*στερεομετρία*). This again is a miracle in the eyes of those who understand how "all nature" (*ὅλη ἡ φύσις*) is moulded in form and kind (*εἶδος καὶ γένος ἀποτυπώνται*) as the function (*δύναμις*) and its converse (*ἡ ἐξ ἐναντίας ταύτη*) move about "the double" in each progression (*i.e.* geometrical, arithmetical, harmonic, 990d, 6—991a, 1). The simplest form of "the double" is the ratio 2/1, from this we get, in geometrical progression, the second power 4/1, and the third 8/1. With this third term 8/1, "the double" has advanced to "volume and the tangible." If we treat 1 and 2 as the end terms of an arithmetical or harmonic progression and insert the arithmetical mean 3/2 and the harmonic mean 4/3 (or, if, to get whole numbers for all the terms, we consider the A.P. 6, 9, 12 and the H.P. 6, 8, 12) we have the secret of music (991a, 1—b, 4).

The general drift of the argument may be considered before we come to detail. The connexion in thought is this. To compare the various astronomical periods with one another, we need arithmetic. We begin the study with the arithmetic of the

integers or natural numbers, and we must remember that it is explicitly announced that (1) the integers are to be studied as "pure," not as "embodied," and (2) that the study is to involve an account of their *γένεσις* or derivation. The point of the first statement is to guard against the confusion, into which it is so easy to fall, between an integer and a collection of which it is the cardinal number. What is meant is that, though every pair consists of two things, every triplet of three, and so on, the number 2 is not a pair of numbers, nor the number 3 a triplet. This is important for two reasons. It makes it clear that though there may be many pairs of things, there are not many 2's but only one 2, the number characteristic of each and every pair, and again, that though a pair, *e.g.*, of gloves is made up of two gloves, 2 is not made up of two 1's. 2 is not two 1's, but one 2, and it does not "contain" any 1's. We see therefore that the standing Aristotelian criticisms, which regularly assume that there are as many 2's as there are pairs, as many 3's as triplets, and again that integers are generated by the summation of 1's, are irrelevant as criticisms of Plato; they are no more than dogmatic affirmations of a non-Platonic, and manifestly false, theory of the nature of the integers. We see also that in the account of the "generation" of integers of which the *Epinomis* speaks, they are meant to be generated in some other way than by summation of 1's, that the integer  $(n + 1)$  will not be defined as the sum of the integer  $n$  and the integer 1. The point could not be stated by Plato in just this way, because the numerical notation at his disposal did not enable him to use a general symbol, like our  $(n + 1)$  or Peano's improved symbol  $(n +)$ , to stand for "the integer immediately after a given integer". His way of stating it is to say, as we know from Aristotle he did say, that "numbers" cannot be "added" (are not *συμβλητοί*).

The transition from the remarks about arithmetic to the comments on "geometry" and "stereometry" has an obvious motive which is not expressed in words. Arithmetic, we are told, must be cultivated because it will be required for the determination of the periods of the heavenly bodies. But it is not the fact, and the *Epinomis* anticipates the knowledge that it is not the fact, that all the ratios we shall have to consider in our astronomy, the ratio, *e.g.*, of the lunar month to the year, or day, or of one planet's period to that of another, can be accurately stated as "ratios of one integer to another". The number of days in the lunar month, or of lunar months in the year is not a whole number, and we must be prepared to face the possibility that it is not a rational fraction. Hence:

the astronomer will need in his calculations to manipulate "surds". He will require to estimate such ratios as that of the side to the diagonal of a square, that of the diameter of a circle to its circumference, of the diameter of a sphere to the edge of each of the regular solids inscribed in it, and of each of these edges to the rest. We may note in this connexion that the two last-mentioned problems are actually discussed, in connexion with the constructions for the inscriptions of the regular solids, "the figures of Plato," in the 13th Book of Euclid's *Elements*, and we may be quite sure that the author of the *Timaeus* was deeply interested in them. We may fairly assume that when Theaetetus completed the Pythagorean geometry by discovering the constructions for the icosahedron and octahedron, he did not neglect to make this determination of the magnitude of edges part of his investigation. It is clear, then, that our astronomer will need to be able to determine the value of irrational quadratic and cubic roots, and to determine it with as close an approximation as his problems demand. Since such values were actually found by geometrical constructions, the common view was that the determination of them belongs not to arithmetic but to geometry, and so long as arithmetic is conceived of simply as the study of the integers, geometry must, of course, be regarded as a wholly distinct science, since it is full of "incommensurable magnitudes," but there are no "incommensurable integers," the position pertinaciously defended by Aristotle. The *Epinomis* insists, on the other hand, that the real scientific problem has nothing in itself to do with the "measuring of land" or the "gauging of solids," but is numerical. In other words, when we have learned how to evaluate the square and cube roots of the integers, we have, in principle, solved the problem of determining the length of the side of a regular polygon of given area, or the edge of a regular solid of given volume. The rest is no more than a special application of our arithmetical discovery. (The insight shown by this view may well be illustrated by a very similar remark which occurs somewhere in Couturat's work *de l'Infini Mathématique*. Most of us commonly think of  $\pi$  as "the ratio of the circumference of a circle to its diameter," and again of  $e$  as the basis of the system of natural logarithms, *i.e.* of a series devised for the practical purpose of facilitating calculations. But the number  $\pi$  and  $e$  have a much more general significance than this. As Couturat says, even if we never had to survey a circular area or to make elaborate calculations, we should come upon  $e$  in the prosecution of analysis by the discovery that  $e^x$  is the function of

*x* which is its own derivative, and we should discover  $\pi$  from such purely numerical considerations as that  $\pi/4$  is the limiting value to which the sum  $1 - \frac{1}{3} + \frac{1}{5} - \frac{1}{7} \dots$  converges as the number of the terms summed increases indefinitely). Thus we may say that the passage of the *Epinomis* under our consideration is historically important as the literary record of the first discovery of the "real numbers," if we are careful to bear in mind that the writer confines his attention only to those real numbers which are necessitated by the geometrical problems familiar to him, the quadratic and cubic irrationals. He does not envisage a series which would contain the whole of the algebraic numbers, still less has he any conception of the "transcendental numbers". (The problem of the quadrature of the circle had, as we know, already been raised in the fifth century, but naturally enough, no one in Plato's time was in a position to say that  $\pi$  might not turn out to be a quadratic surd. That it is not an algebraic number of some kind was only finally proved by Lindemann in our own days.)

So far, then, we have reached the result that astronomical problems force on us the extension of arithmetic by the discovery of a method of evaluating quadratic and cubic "surds," and a corresponding enlargement of our conception of number which will enable us to include these "surds" among numbers. What the required method of evaluation is to be is at least hinted in the words which follow. We are now told that if we take the simplest of all numerical ratios, that of the "double" 2/1, and its reciprocal, the "half," 1/2, and study them in the light of the doctrine of progressions, they will disclose the whole secret of science. The latter part of this explanation, which deals with music, calls for no comment. It points out simply that 1, 3/2, 2 is an arithmetical progression, 1, 4/3, 2 an harmonic, and that the ratios 3/2 : 1, 4/3 : 1 correspond to the fundamental melodic intervals of the scale, the fifth and the fourth, so that we can get as many octaves as we wish by merely repeating them thus, 1, 3/2, 2, 3, 4 . . . , 1, 4/3, 2, 8/3, 4 . . . Here we are not going beyond familiar Pythagorean ground. The immediate meaning of what precedes is, of course, that 1, 2, 4, 8 . . . is a geometrical series composed of the powers of 2, and is the simplest example of the proposition that the areas of similar polygons are in the ratios of the second powers of their sides, those of the volumes of similar solids in those of the third powers of their edges. But there is clearly more intended than this, and we must discover what that more is before we shall see the connexion between what had been said about

the generalisation of number and these remarks about geometrical progression. The "double" had been in the fifth century the subject of one disturbing problem, that of the "common measure of the side and diagonal," where the problem is to know what must be the length of the side of a square if its area is to be double that of a given square. In Plato's own time it gave rise to another problem, with which Plato is traditionally said to have been concerned, the "Delian problem" of finding the length of the edge of a cube whose volume is double that of a given cube. In other words, the fifth century had been concerned with the question what is the "square root" of 2, the fourth was trying to find the "cube root" of 2, and I suggest that the language of our passage is meant as a definite allusion to this. The underlying thought would thus be that the theory of arithmetic will only be complete when we have learned how to give a numerical expression for  $\sqrt{2}$  and  $\sqrt[3]{2}$ —and thus, by the way, solved the "Delian problem"—and have then proceeded to generalise a method for the evaluation of the rest of the quadratic and cubic "irrationals".

If these were the special origins of Plato's conception, it ought not to be difficult to determine what kind of method he has in view, and then to answer our former question about the reason for the name "great-and-small." There was already in existence in the latter part of the fifth century a rule for making approximations to the value of  $\sqrt{2}$ , the rule to which Plato apparently alludes in *Rep.*, 546c, where he makes Socrates speak of 7 as the "rational diameter of 5".

The meaning is that since  $7^2 = 49$  and  $5^2 = \frac{50}{2}$ ,  $\frac{7}{5}$  is an approximate value of  $\sqrt{2}$ . The "diagonal" ( $\deltaιάμετρος$ ) of 5, that is the length of the diagonal of a square whose side is 5, is, by the Pythagorean theorem,  $5\sqrt{2}$ , and this is an "irrational," but  $7/5$  approximates fairly closely to it, since  $7^2 = 2 \times 5^2 - 1$ . Of course it would be possible to suppose that such approximations were originally discovered empirically. One might, for example, write out a list of the "squares" of the integers from 1 to 100, and then pick out, by inspection, every pair of values which would satisfy the equation  $y^2 = 2x^2 \pm 1$ . This would yield us the pairs of integral values,  $x = 1, y = 1$ ;  $x = 2, y = 3$ ;  $x = 5, y = 7$ ;  $x = 12, y = 17$ ;  $x = 29, y = 41$ ;  $x = 70, y = 99$ . But there is a general rule, given by Theon of Smyrna (Hiller, p. 43 f.) for finding all the integral solutions of the equation, or, as the Greek expression was, for finding an unending succession of "rational diameters," that is, of in-

creasingly accurate rational approximations to  $\sqrt{2}$ , the "ratio of the diagonal to the side". The rule, as given by Theōn, is this. We form two columns of integers called respectively "sides" and "diagonals." In either column we start with 1 as the first term; to get the rest of the "sides," we add together the  $n$ th "side" and the  $n$ th "diagonal" to form the  $n+1$ th "side"; in the column of "diagonals," the  $(n+1)$ th "diagonal" is made by adding the  $n$ th "diagonal" to twice the  $n$ th side. Fortunately also Proclus (*In Remp.*, Kroll II, 24-25, 27-29, *ibid.*, *Excursus*, II, p. 393 ff.) has preserved the recognised demonstration of this rule; it is a simple piece of geometry depending only on the identity  $(a+b)^2 + b^2 = 2(a/2)^2 + 2(a/2+b)^2$ , which forms Euclid's proposition II, 10. Since the students of the history of Greek geometry seem agreed that the contents of *Euclid* II are all early Pythagorean, there is no reason why the rule given by Theon should not have been familiar not only to Plato, but to Socrates and his friends in the fifth century. The probability is that they were acquainted with it, and thus knew how to form an endless series of increasingly close approximations to one "irrational,"  $\sqrt{2}$ .<sup>1</sup>

We note at once that the fractions obtained by forming the "sides" and "diagonals" are identical with what we call in modern language the successive "convergents" to  $\sqrt{2}$ , formed by expressing the "irrational" as an unending continued fraction. I hope the reader acquainted with a little elementary algebra will pardon me if I explain this point briefly for the benefit of students of Plato whose school mathematics have been neglected through no fault of their own.

To express a quadratic surd as an unending fraction, we start from the identity  $(\sqrt{a} + b)(\sqrt{a} - b) = a - b^2$ . Thus in the case where  $\sqrt{a}$  is to be  $\sqrt{2}$ , we can put  $b = 1$ , and the identity becomes

$$(\sqrt{2} + 1)(\sqrt{2} - 1) = 2 - 1, \text{ i.e. } \sqrt{2} - 1 = \frac{1}{\sqrt{2} + 1}.$$

<sup>1</sup> It may be noted in passing that the interest in finding the value of  $\sqrt{2}$  is not prompted by purely "geometrical" considerations. Since one approximate value is  $17/12$ , for  $17^2 = 289 = 2 \times 144 + 1 = 2 \times 12^2 + 1$ , 17 is *very nearly*  $= 12\sqrt{2}$ . If it were strictly true that  $\sqrt{2} = 17/12$ , it would follow that  $17^2 = 288$ , and therefore  $= 16 \times 18$ . Thus 16, 17, 18, would be a geometrical progression and we should have  $18/16$  or  $9/8 = (17/16)^2$ . This would enable us to divide the musical interval of the tone into two equal semi-tones. The irrationality of the "diagonal" is thus responsible for a corresponding irrationality in music.

We then proceed as follows:—

$$\begin{aligned}\sqrt{2} &= 1 + (\sqrt{2} - 1) = 1 + \frac{1}{\sqrt{2} + 1} = 1 + \frac{1}{2 + (\sqrt{2} - 1)} \\ &= \frac{1+1}{2+1} \frac{1+1}{2+1} \frac{1+1}{2+1} = \frac{2+1}{(\sqrt{2}+1)} \frac{2+1}{2+(\sqrt{2}-1)} = \frac{2+1}{(\sqrt{2}+1)}\end{aligned}$$

Where we see that by substituting  $\frac{1}{(\sqrt{2} + 1)}$  for  $(\sqrt{2} - 1)$ , whenever the second expression recurs, we shall ultimately get the unending fraction

$$\sqrt{2} = 1 + \frac{1}{2 + \frac{1}{2 + \frac{1}{2 + \frac{1}{2 + \dots}}}}$$

The successive "convergents" to the value of this fraction are formed by "stopping it off" at the first, second, . . .  $n$ th step in the formation. Thus they are the rational numbers

$$1, \frac{1+1}{2}, \frac{1+1}{2+1}, \frac{1+1}{2+2}, \dots$$

and so forth. The reader will readily see that they correspond precisely to the series of "diagonals" and "sides" given by Theon, the numerator and denominator of each being one of the pairs of integral solutions of the equation  $y^2 = 2x^2 \pm 1$ .

On examining the way in which the unending "continued fraction" and its "convergents" are formed, we at once note the following points:—

(a) Each "convergent" is a nearer approximation to the required value than the one before it. Thus  $17/12$  is a nearer approximation to  $\sqrt{2}$  than  $7/5$ , since if we take  $2 \times 5^2$  as  $= 7^2$ , we are wrong by 1 in 50, but, if we take  $2 \times 12^2$  as  $= 17^2$ , we are only wrong by 1 in 288.

(b) The convergents are alternately rather less and rather greater than the value to which they are approximations. Thus  $7/5$  is less than  $\sqrt{2}$ , since  $7^2 = 2 \times 5^2 - 1$ ;  $17/12$  is  $> \sqrt{2}$ , since  $17^2 = 2 \times 12^2 + 1$ . 7 and 5 are, in fact, solutions in  $y$  and  $x$  of the equation  $y^2 = 2x^2 - 1$ ; 17 and 12 are solutions of  $y^2 = 2x^2 + 1$ .

(c) The interval, or absolute distance, between two successive "convergents" steadily decreases, and by taking  $n$  sufficiently large, we can make the interval between the  $n$ th and  $(n + 1)$ th convergent less than any assigned rational fraction  $\sigma$ , however small, and can therefore make the interval between the  $n$ th convergent and the required "irrational" smaller still than  $\sigma$ .

(d) The method is manifestly applicable to any "quadratic" surd, since it rests on the general formula

$$(\sqrt{a} - b) = \frac{a - b^2}{(\sqrt{a} + b)}.$$

It is most readily applicable when  $a$ , whose "square root" is required, is an integer of the form  $m^2 + 1$ , since in that case, by taking  $b = m$ , we reduce our fundamental formula to the simple form  $(\sqrt{a} - 1) = \frac{1}{(\sqrt{a} + 1)}$ . Thus we get at once such results as that

$$\begin{array}{c} \sqrt{5} = 2 + \frac{1}{4 + \frac{1}{4 + \dots}} \\ \sqrt{17} = 4 + \frac{1}{8 + \frac{1}{8 + \dots}} \end{array}$$

But we can also use it with a little more trouble to yield, e.g.

$$\begin{array}{c} \sqrt{3} = 1 + \frac{1}{1 + \frac{1}{2 + \frac{1}{1 + \frac{1}{2 + \dots}}}} \end{array}$$

and similar results.

The general character of the procedure is thus that in the expression of  $\sqrt{a}$  as an "unending continued fraction," by forming the series of "convergents" we pin down  $\sqrt{a}$  between two values, one of which is a little too small and the other a little too large, but the difference between the too small and the too large is decreasing at every step and can be made less than any fraction we like to assign, though we never quite get rid of it, because we cannot actually arrive at a last convergent. To put it another way, in approximating to  $\sqrt{2}$  by this method, we are not merely approximating to a "limit," we are approximating to it from *both* sides at once;  $\sqrt{2}$  is at once the upper limit to which the series of the values which are too small,  $1, 7/5, \dots$  are tending, and the lower limit to which the values which are too large,  $3/2, 17/12, \dots$  are tending. *This*, as it seems to me, is manifestly the original reason

why Plato requires us to substitute for the *ἀπειρον* as *one* thing, a "duality" of the great and small.  $\sqrt{2}$  is an *ἀπειρον*, because you may go on endlessly making closer and closer approximations to it without ever reaching it; it never quite turns into a rational number, though it seems to be on the way to do so. But also, it is a "great-and-small" because it is the limit to which one series of values, all too large, tends to decrease, and also the limit to which another series, all too small, tends to increase.

The meaning of what is said in our passage of the *Epinomis* about plane geometry will thus be that the real problem of the study is to evaluate all quadratic surds ( $\sqrt{3}$ ,  $\sqrt{5}$ , etc.), by the same method which has proved successful in the case of the "double"; they are all, in modern phraseology, to be expressed as unending "continued fractions," and our conception of number is to be enlarged to include these "irrationals," which by the proposed method can be made rational to within whatever "standard" we like to adopt. It is the indispensability of providing a means of checking the interval within which the "error" of an approximation falls which is the real reason for replacing the single *ἀπειρον* by a "duality".

Thus, for example, when we know that  $\sqrt{2}$  lies somewhere between 1 and  $3/2$ , our work is not really done. We are not to say that it simply is one of the "infinitely numerous" values between 1 and  $3/2$ . By taking the next pair of "convergents,"  $7/5$  and  $17/12$  we can exclude it from that part of the interval  $(3/2 - 1)$  which lies between 1 and  $7/5$  and again from that part of it which lies between  $18/12$  and  $17/12$ . The alternation of the too small which is steadily increasing and the too great which is steadily decreasing is demanded if we are to estimate the amount of error incurred by taking a given approximation as the true value of our "irrational".

It may be worth while to note here that this absolute necessity for the revision of the Pythagorean formula would not have existed if the Greek arithmeticians had possessed our method of developing irrational "square roots" as unending decimal fractions. When we employ this method to evaluate  $\sqrt{2}$  and get the result that  $\sqrt{2} = 1.41421, \dots$  we are approaching our "irrational" only from one side, that of the "too small". Any approximation got by taking  $n$  significant figures to the right of the decimal point will be too small, because there are always still more significant figures that can be added. Yet we are able to assign a limit to the amount of the error. Thus I can say at once that the value 1.4 is too

small by an amount which lies somewhere between '01 and '02. And yet, even so, we have not quite got away from the "duality". If I merely said that 1·4 is "too small," this would leave much too wide a margin of error, since the possible error might be anything between '00000 . . . 1, when I may suppose as many 0's as I please, provided only that the number is finite, and '009999 . . . where again, the 9's may be as numerous as you please, so long as their number is finite. If we are to make any accurate estimate of the error, still more, if we are to be able to diminish it *ad libitum*, we must be able to confine our approximation between a *μέγα* and a *μικρόν*. We do this habitually in our elementary calculation, when we follow the rule that if we wish to get an approximation right to  $n$  "significant places," we must first work it out to  $(n + 1)$  places, and then, if the  $(n + 1)$ th figure is greater than 5, increase the  $n$ th by 1; for example, if we wish to give the value of  $\pi$  "to four places," we must not write 3·1415, though 5 is really the fourth figure in the "decimal"; we must write 3·1416, since the full calculation would give 3·14159. . . .

The task which the *Epinomis* would impose on the "geometer" would, in the absence of a numerical notation resting on the principle of position, be a formidable one. We can conceive two possible ways of executing it. One would be the purely empirical one of forming a table of the successive "squares" of integers by actual multiplication and then picking out on inspection suitable pairs. Thus, to find  $\sqrt{3}$ , we might try to pick out from such a table the pairs which satisfy one of the equations  $y^2 = 3x^2 - 2$ ,  $y^2 = 3x^2 + 1$ . The solution of the first equation would give the first, third, fifth, . . . those of the second the second, fourth . . . , "convergents" to the continued fraction  $1 + \frac{1}{2 + \dots}$ . But this procedure

$$1 + \frac{1}{2 + \dots}$$

would not only be exceedingly tedious, in view of the great number of multiplications involved; it would have the further difficulty that the requisite equations are hard to detect except in the most favourable cases. We may, therefore, feel fairly sure that a fourth-century student of the problem would attempt to establish the equation by finding a geometrical construction on the basis of Euclid, *Elements* II, as we know from Proclus was actually done for  $\sqrt{2}$ . But these constructions themselves would often be difficult to discover, and I have not been able as yet to learn whether any such constructions can be shown to have been actually known in the

fourth century. Is there any proof that there was a known construction of this kind for  $\sqrt{3}$ ? Perhaps some special student of the history of mathematics may be able to answer the question. If there was not, we must understand the *Epinomis* as simply indicating a programme for Academic mathematicians of the future.<sup>1</sup> In any case, it should be noted that the principle of the method, the pinning down of an irrational between a "too large" and a "too small" which are made to approach one another indefinitely is the same which was employed for the finding of the areas of curvilinear figures and the volumes of solids with curved surfaces, as when, e.g., the area of the circle was treated as intermediate between that of a circumscribed and a similar inscribed polygon and these two areas then made to tend to equality by supposing the number of the sides of the polygon increased.

The "stereometer's" problem is next said to be in principle the same. His business is to express surd "cube roots" as limits of series of approximation which are alternately too large and too small. Here, again, we have the materials for a question which I should like to propose to special students of the history of mathematics. Had the mathematicians of the fourth or third century a method of extracting such "roots," and if they had, what was it? The restriction of the treatment of irrationals in *Euclid* X to quadratic surds may possibly be evidence that no such method was in the possession of Euclid or his Academic precursors, since one cannot believe that they would not have utilised it, if they possessed it, for the solution of the "Delian" and similar problems. (The solutions known to us are all geometrical, not arithmetical.) In any case, if the Academy anticipated, as the language of the *Epinomis* would naturally suggest, that the problem could be solved by a method analogous to the construction of endless continued fractions, their anticipations were pre-

<sup>1</sup> See on the whole subject Zeuthen, *Histoire des mathématiques dans l'antiquité et dans le moyen âge*, 43-52, for the difficulties to be faced. The one such approximation to an irrational square root preserved in the literature before the time of Hero of Alexandria seems to be the value of  $\sqrt{3}$  given by Archimedes in *Dimensio Circuli*, III. He assumes that the value is intermediate between  $265/153$  and  $1351/780$  (*op. cit.*, 49). Both fractions occur among the convergents to  $1 + \frac{1}{2 + \frac{1}{1 + \frac{1}{2 + \dots}}}$ , the expression of  $\sqrt{3}$  as a

$$1 + \frac{1}{2 + \frac{1}{1 + \frac{1}{2 + \dots}}}$$

"continued fraction," the former being the ninth and the latter the twelfth term of the series. It is not clear to me why the more accurate  $989/571$  was not taken as the value which errs by defect.

mature. The problem resists this treatment for the simple reason that the product  $(\sqrt[3]{a} - \sqrt[3]{b})(\sqrt[3]{a} + \sqrt[3]{b})$  is irrational. Yet we can exhibit cube roots in a form which displays the regular alternation of the "great" and the "small," though by a method unknown to the ancients. For we can in general write  $\sqrt[3]{x+y} = \sqrt[3]{x} \times \sqrt[3]{1+y/x}$  and then proceed to expand  $(1+y/x)^{1/3}$  by the Binomial Theorem, since it is easy to show that  $(1+y/x)^{1/3}$  is convergent if  $y/x < 1$ . Hence, when once we have found  $\sqrt[3]{2}$ , we can find in succession  $\sqrt[3]{3}$ ,  $\sqrt[3]{4}$  and the rest. For  $\sqrt[3]{2}$  itself, things stand rather differently, as we cannot throw  $(1+1)^{1/3}$  into the form demanded. We can, however, show that the series arising from the expansion of  $(1+1)^{1/3}$  is convergent by considering that the terms, apart from the first, form a series in which each term is numerically less than the preceding, and that they are alternately positive and negative. This proves that the sum of them converges to a limiting value, and consequently the sum of them with the addition of the first term, 1, is also convergent. In practice the method is not employed, for the reason that a considerable number of terms have to be calculated in order to secure any accuracy of approximation. We are not entitled to assume that the Academy actually possessed any method by which  $\sqrt[3]{2}$  could be calculated, and the Delian problem solved arithmetically, rapidly, and accurately. We should rather take the *Epinomis* to express the natural hope that the method which had disposed of the fifth-century problem of "side and diagonal" would prove directly applicable to all the "irrationals" as yet recognised, quadratic and cubic alike.

I submit, then, that the character of the series of what we call the "convergents" to an endless continued fraction supplies the reason for the denomination of the irrational as *μέγα καὶ μικρόν*; in the power the method affords of restricting the value of the irrational within limits which can be made to approach one another as nearly as we wish, we have the motive for the correction of the earlier formula; in the anxiety to clear up the mystery of the "side and diagonal" we can see the starting-point of the conception. If this is so, we understand the origin of the formula guaranteed by Aristotle, that the part played by the "formal" element in a "number," the one, is to *equalise* (*ισάζειν*) the "great" and the "small."<sup>1</sup> Since the series of convergents, alternately too small and too large, never actually comes to an end, there is always an

<sup>1</sup> *Met. M.*, 1081a, 24, where ὁ πρῶτος εἰπών definitely ascribes the expression to Plato.

"inequality" or tension between the "great" and the "small," and thus always a still unrationallised "matter" in the "number." But since we can make the interval between two consecutive convergents less than any assigned rational interval, the tension is steadily growing fainter as you pass along the series. It would come to rest in a complete "equality," if, *per impossibile*, two successive convergents could have an identical value. They would then not be two values, but one; the "interval" would be reduced to zero. This never actually happens, but it "all but happens"; you cannot come literally "as near as nothing" to a rational fraction which, when multiplied by itself, gives the product 2 or 3 or 5, but you *can* come *nearer* than anything which is not literally 0 to such a fraction. Thus we might say of the "irrational" in the phraseology of the *Phaedo*, that though it never quite succeeds in being a rational, "it tries its very hardest to be one," and misses by immeasurably less than the traditional hair's breadth. This means that if we are to equate Forms with "numbers," as Aristotle assumes that Plato did, and also to say, with the *Epinomis*, that "irrational roots" are numbers, and therefore Forms, the relation the *Phaedo* assumes for "sensible things to Forms, must also exist among the Forms themselves". The "irrational" is a Form, but it is always trying, and never quite succeeding in the attempt, to exhibit the Form of a "rational". (The unending "decimal" tries its hardest to "recur".) This is, in principle, why the *στοιχεῖα* of the Forms are the *στοιχεῖα* of all things.

We may illustrate this point in a little more detail from the *Timaeus*. It is true that the speaker there is a fifth-century Pythagorean and that his repeated insistence on the provisional and tentative character of all his mathematical physics shows us that Plato does not wish to take the responsibility for precise details. But the existence of the dialogue itself is sufficient proof that the general type of view which pervades the dialogue is meant to be regarded as sound. There all the sensible characters of bodies animate and inanimate are made to be functionally dependent on the geometrical structure of their corpuscles. The structure of the corpuscles again is determined by that of their faces, and that of the faces by the structure of the two types of triangle from which they are built up. Now the triangles are determined in everything but their "absolute magnitude," which is asserted by *Timaeus* (57 d) to be variable within limits, by the triplet of "numbers" which gives the ratios of their sides to one another, and this triplet in each case introduces irrationals.

For the isosceles right-angled triangle, it is the triplet  $(1, 1, \sqrt{2})$  and for the "right-angled scalene" adopted as the foundation of three of the five regular solids, the triplet  $(1, \sqrt{3}, 2)$ . If you know how to "approximate" within as near an interval as you please to  $\sqrt{2}$  and  $\sqrt{3}$ , you know how to form these triangles, and thus you are possessed of the secret on which all the physical characters of the realm of becoming depend. The *στοιχεῖα* of the "numbers,"  $\sqrt{2}$ ,  $\sqrt{3}$ , are, in the end, the *στοιχεῖα* of *γυγνόμενα*. It is worth noting that the two triangles might equally have been specified by giving the ratios between their *angles*. This would give the triplets  $(1, 1, 2)$ ,  $(1, 2, 3)$ , where no irrational appears. In Speusippus, Fr. 4, where these triangles and their significance for solid geometry are described, *these* ratios are mentioned, but nothing is said about the others. This is significant, since the passage is given in the *Theologumena Arithmetica* as an extract from a work by Speusippus, the *Pythagorean Numbers*, based on the teaching of Philolaus. We may infer that the originators of the doctrine of the "elementary triangles" reached it by a consideration of the angles of the two figures, and if they knew, as they pretty certainly must have known, that the ratios of the sides, in both cases, introduced the "scandal" of the "incommensurable," they kept a decent silence on the point. Plato, on the other hand, calls express attention to the ratios of the sides, and is silent about those of the angles, but for the single remark that there is a certain "beauty" about these triangles, which presumably means that the ratios involved between their angles are the simplest *λόγοι* of integer to integer,  $1:1$ ,  $1:2$ ,  $1:3$ . Thus he makes Timaeus bold enough to insist on the very point which is embarrassing to the Pythagorean conception of number, but, in the interests of historical verisimilitude, will not let him say that his geometrical *ἀρχαῖ* have still more ultimate arithmetical *ἀρχαῖ*, "surd" numbers. He allows the speaker to escape with the ambiguous remark that "God knows" what *ἀρχαῖ* there can be more ultimate than the triangles (*Timaeus*, 53 d).

In the *Theaetetus* (147 d) we are told that the Pythagorean mathematician Theodorus has just been explaining to the lad Theaetetus and his friends that  $3, 5 \dots 17$  have no rational square roots. This plainly does not mean that Theodorus merely explained that these numbers have no integral square roots; this is obvious and could have been said in a sentence. Nor can it mean that Theodorus actually possessed and explained the method of approximating to  $\sqrt{3}$  and the rest.

If a Pythagorean in the year 399 could have given such a method, there would have been no novelty about the Platonic view of number. We must suppose that Theodorus is supposed to be able to demonstrate the irrationality of the various numbers,  $\sqrt{3}$ ,  $\sqrt{5}$  . . ., without knowing how to construct them, and to show that the construction involves an endless series. The simplest way in which this might be done would be to employ the kind of reasoning by which it is proved in a theorem appearing in some MSS. at the end of Book X of Euclid's *Elements*<sup>1</sup> that  $\sqrt{2}$  is irrational. The method is to prove that if there is a rational root, the absurd consequence follows that a certain fraction both is and is not stated "in its lowest terms". Thus, if we suppose that  $\sqrt{3} = (1 + m/n)$  where  $m$  and  $n$  are integers and have no common factor, it is easy to prove that our equation demands that both  $m$  and  $n$  shall be even numbers, and therefore have the common factor 2, contrary to the hypothesis. The method could be used for any of the numbers stated to have been investigated by Theodorus. Also, in some cases, as Zeuthen has pointed out,<sup>2</sup> it would be possible to apply the method given in Euclid X. 2 for the finding of a G.C.M., and to show that a given rational magnitude and a second magnitude under consideration have no G.C.M., and therefore the second must be incommensurable with the first. (Thus it is easy to see from the construction of Euclid II. 11 that the two segments into which a straight line is divided in the proposition have the ratio  $\sqrt{5} - 1 : 2$ , and then, by using Euclid X. 2, that the two segments have no G.C.M.) Zeuthen reasonably infers that the irrationality of the expression  $\sqrt{5} - 1$ , and consequently of  $\sqrt{5}$  must have been known to Theaetetus in this way. (It does not follow, though it is possible, that Theodorus had actually demonstrated the fact. We might suppose that Plato is taking certain propositions, due to his own associate Theaetetus, and dramatically feigning him to have learned them from his old teacher, though in view of the admittedly Pythagorean character of the "geometrical algebra" of Euclid II, I think it probable that we may go a step beyond Zeuthen and ascribe the propositions in question to Theodorus.)

In the *Meno* again (83a-e) the immediate object of the cross-questioning of Meno's page is to establish the point that  $\sqrt{2}$  lies somewhere between 1 and 1.5. The *Republic* (546 c) shows that Socrates is familiar with the closer approximation 1.4 (7/5), and we may suppose that if it had been necessary

<sup>1</sup> Heiberg, *Euclides*, III. App. pr. 27.

<sup>2</sup> *Op. cit.*, p. 45.

for his purpose, he could have continued his elenchus until this had been made plain, *i.e.* that he knew the construction given by Proclus for approximation to  $\sqrt{2}$ .

To sum up, then, the special points I want to make are these:—

(a) The fundamental novelty about the Platonic theory is that it represents the first discovery, in an incomplete form, of the real *numbers*, as the ultimate determinants of geometrical structure, and so mediately of the physical characters of things.

(b) That the real numbers are conceived of as the common limit to which two "infinite" series "converge". The terms of the one series (that of the odd "convergents" of the complete double series) are always "too small," but the defect is steadily diminishing; the terms of the other (the series of the even "convergents") are all "too great," but the excess steadily diminishes. This is why the "material" constituent of number must be called the *μέγα καὶ μικρόν*.

(c) The origin of the whole theory is to be found in the discovery of the "side-and-diagonal" numbers which form an endless series of increasingly close approximations to  $\sqrt{2}$ . Plato holds that the business of "geometry" is to discover similar series for all the quadratic surds.

(d) The rise of solid geometry in the Academy, leading as it did to problems involving "cube roots," creates a demand for the formulation of a similar method of approaching the cubic surds alternately from the side of the too great and from that of the too small. Here again, the simplest case of the general problem is that of finding a series for  $\sqrt[3]{2}$  (the "Delian problem.") Theoretically the construction of such series of approximations to cube roots from the two sides alternately is readily performed, though it involves algebraical methods not possessed by the Greek mathematicians. Practically the method has little value, since the number of terms which must be taken into account to secure a moderately accurate approximation is inconveniently large.

There is one further observation, more important than any of the foregoing, which can only be made here with the utmost brevity. The Platonic theory is inspired by the same demand for pure rationality which has led in modern times to the "arithmetisation of mathematics". The object aimed at, in both cases, is to get rid of the dualism between so-called "continuous" and "discrete" magnitude. The apparent mystery which hangs about the "irrationals" is to be dispelled by showing how they can be derived, by a logical

process which is transparently rational at every step, from the integers and the "rational fractions," or  $\lambda\circ\gamma\circ\iota$  of integers to integers. It is precisely the same process, carried further, which we see in modern times in the arithmetical theory of the continuum, or in Cantor's further elaboration of an arithmetic of the "transfinite". In all these cases, the motive for the construction is to get rid of an apparent mystery by the discovery in the seemingly unintelligible of the principle of order of which the integer-series is the perfect and ideal embodiment. "Forms are numbers" because "order is Heaven's first law," and number is the type and pattern of order. The task which still awaits us is to consider the nature of the further and final step by which the conception of number as the determination of a "material" (the great-and-small), by "form" or "order" was extended to cover the case of the integers themselves. So far as we have gone, the integers and their order have figured as given data, but the harder problem remains, to detect the elements of matter and form within the integer-series itself. We must not be surprised if we find that the Platonic theory, so far as we can discern its character, was less successful in dealing with this than with the easier problem of the rationalising of the irrational.

*(To be continued.)*

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### III.—PSYCHOLOGY IN ITS RELATIONS TO PHILOSOPHY AND SCIENCE.

BY E. RIGNANO.

It would now be a platitude to show how the different branches of Science, the study of which was formerly included in that of Philosophy, were gradually separated from this and now develop quite independently of it. Thus, Mathematics, a science which owes, if not its origin, at least its earliest development to the philosophical school of Pythagoras, is now completely detached from the field of philosophical investigation; and, if nowadays there are eminent mathematicians who busy themselves also with philosophy, there are very few philosophers expert in mathematics.

And while the other philosophical schools of ancient Greece, from Thales onwards, started from the phenomena of the inorganic world, endeavouring intuitively to explain how the whole Cosmos had its origin in the reciprocal action of a few elements, varying with the varying of the schools, to-day physics and chemistry have no part in philosophical research, but only in scientific investigation.

As for the phenomena of Life, their very complexity, so much greater, rendered every attempt to explain them through mere intuition enormously more difficult, and therefore little suitable for philosophical speculation, though this was not absolutely excluded, as is proved especially by the attempt made by Aristotle in this field. In any case, the study of such phenomena, especially after Hippocrates, soon began to follow a line of its own, purely scientific, that is to say, experimental, and independent of Philosophy. It is, anyhow, only in more recent times, especially since Descartes and as a consequence of the philosophical problems concerning man's place in the universe, that philosophy has once more put forward a claim to have a say also concerning the problems of Life. Quite recent examples of this are to be found in the ex-biologist but actually pure philosopher, Driesch, in Bergson and in the author of this paper, who has dedicated

much of his philosophical activity to the study of the most fundamental biological problems.

Psychology, instead, owing to the introspective method which it allows and which makes of it a field open to intuition, not only has its origin entirely in the sphere of philosophy, but has always remained, and still remains, an intrinsic part of it; and this for the following reasons.

We may say, if we care to make a synthetic summary of the three great branches into which philosophic speculation is subdivided practically from its origin—the branches, however, continually intertwining—that they consist:—

(1) In the forming of a conception of the universe (*Weltanschauung*, to use the German expression) in the ardent desire to know the fate and destiny reserved to the individual as well as to humanity in this universe.

(2) In constructing a theory of knowledge, either to define, also from this point of view, the relation of Man to the Universe, or to attain to an exact idea of the nature of our knowledge, and the degree of faith it deserves.

(3) In seeking, for our neighbours and ourselves, those supreme principles by which we are to be guided in our conduct; which constitutes the study of morals and of human values.

Now, in all these three branches into which philosophical speculation is subdivided, psychology is not only useful but necessary:—

*E.g.*, a central problem of philosophical speculation aiming at an integral *Weltanschauung* is that of the teleologism or ateleologism of the universe; that is to say, whether this universe moves or does not move towards a goal, or whether only a part of it tends towards a goal,—namely, organic nature, and not the rest, inorganic nature,—and in what, in both cases, such finality consists. Now it is precisely in the manifestations of our spirit, and more especially in those of the affective part of it—in, that is to say, our desires, longings, in our lowest cupidity or in our noblest aspirations—that we find the prototype of teleological manifestations, and therefore it is in this prototype that we must study in what teleology generally consists. Only then, having determined in what the essence of teleology consists, shall we be able to proceed to the solution of the problem of the teleologism or ateleologism of the whole Universe, or of only one or the other part of it.

As regards the theory of knowledge, it is almost self-evident that we cannot hope to construct anything on a solid basis, without first accurately analysing the mental

phenomena in which the faculty of knowing consists. And as the chief, the essential, instrument for acquiring knowledge, is human reason—that is the faculty of reasoning—it is clearly necessary to investigate what reasoning is, before trying to throw light on the nature of our knowledge, on the nature of science, or on the nature of positive and metaphysical speculation themselves.

Indeed, so far as this is concerned, those who are acquainted with our work on the *Psychology of Reasoning* will not require us to remind them of the division made by us of reasoning into two great branches, essentially, profoundly different from each other, each, however, being able to assume the same identical syllogistic form,—the one being “constructive” reasoning, the other, “intentional” reasoning,—brightly illuminating on one side the essence of positivism, and, on the other, the essence of metaphysics.

No one is ignorant of the attacks directed by positivism against metaphysics. They may be summed up as follows: While, little by little but with certainty, Science, on the solid basis of reality, erects scientific edifices which defy the ages,—Euclid's demonstrations and constructions, Archimedes' principle of Hydrostatics, in fact, are valid even to-day,—metaphysical philosophy, instead, fancifully creates castles in the air, castles ever new, ever different, which continually vanish before the sunlight of the positive facts discovered by Science.

Now if I myself, as a positivist, must admit the truth of a great part of this accusation, I cannot, however, but reproach the positivists with having neglected and taken too little account of the marvellous vitality, the perennial and indestructible vitality, of which metaphysics gives continual proof, notwithstanding all its many failures. Ever, after a defeat, this philosophy rises to greater vitality than before, unwearied in constructing newer and newer systems, admirably and heroically obstinate in refusing to yield to her implacable adversary.

How is it possible, then, to comprehend the intimate nature of the struggle between Positivism and Metaphysics, until a psychological analysis has revealed to us the different psychical nature of the two adversaries?

Finally, for what concerns morals, the science of human values, it is evident that, every valuation being of an affective nature, the very essence of every ethical principle can only be such. Hence the great utility of psychological analysis of the affective tendencies in the construction of any ethical system; whilst the psychological analysis of the affective

tendencies and at the same time of the nature of reasoning throws light on certain ethical problems which have been unsolved for centuries, and which without this previous examination would remain insoluble—for instance, that concerning the possibility or impossibility of founding an ethical system by reason alone, a very old aspiration which we find as far back as the Epicurean and especially in the Stoic school, and taken up again by Kant in his famous theory of "Practical Reason".

As every one knows, streams of ink have been and will still be poured out (since the war we notice a formidable return to Kantian studies in Germany) on the question of the success or failure of the great German philosopher in his attempt to deduce his Categorical Imperative from a pure process of reasoning and thus to give a purely rational foundation to Morals. Now all those rivers of ink will never flow into the calm sea of a certainty recognised and admitted to be such by all, unless one sees first in what the reasoning consists, and analyses psychologically the influence which affective tendencies have on reason—an influence which differs greatly according to whether the reasoning is "constructive" or whether it is "intentional"; and unless one succeeds in showing in which of these two categories "die praktische Vernunft" of Kant is to be placed.

Other philosophical questions, which by now are classical in the field of Ethics, are those of the so-called "Free Will" and of moral responsibility, which have been dragging on for centuries, we may say, until to-day, without ever coming to any conclusion, simply because of the mistaken way in which the problem has been presented. To see what a thick veil has always covered and complicated these never-ending problems, to see it rise and vanish like morning mist before the first rays of a glorious sun, we only require a simple psychological analysis of that complex psychical phenomenon which is the volitional act—the *Will*.

From such examples, though only touched upon, clearly emerge not only the utility but also the necessity of psychology in the study of the chief problems which from the beginning of the world have always been the torment of really philosophic minds.

If we pass from the relation between Philosophy and Psychology to that between Psychology and Science, we see, in the same way, that all the fundamental questions at the basis of the latter—which for that very reason are philosophically very important—cannot be solved without

the aid of Psychology. The problems, for instance, concerning the very nature of Science, whether it is really explanatory or only descriptive; or the consistency of the principle of Causality which rules in it; or the methodology suitable to Science as a whole, and the various methods most appropriate to each of its branches; concerning also the greater or lesser part which intuition and deduction, synthesis and analysis, concrete imagination and abstract conception, play in the development of Science; the essence of scientific concepts, the characteristics of abstract in comparison with concrete reasoning, and the superiority of the former to the latter; the function of the syllogism in mathematics and in other exact, deductive sciences, the productivity or sterility of mathematical reasoning (a question, this, raised but left unsolved by the late illustrious mathematician Henri Poincaré), and so on: all these questions, of such fundamental importance for the progress of Science itself, really turn out to be so many psychological problems which can only be solved by psychology.

Many errors in the course of scientific evolution might have been avoided simply through a prior psychological investigation of the relative modes of proceeding: the great hopes, for instance, placed in "logistics" or mathematical logic, that is in the application of the algebraic algorithm also to common reasoning, not mathematical—hopes which met with complete failure—were owing to the complete lack of recognition of the psychological nature of reasoning, and of the part which imagination, under the stimulus of affective tendencies, plays in it, along with the erroneous valuation, also psychological, of the function which the algebraic algorithm has in mathematics, and which it cannot have in ordinary reasoning.

Similarly many questions of fundamental scientific importance, still unsolved, would by now have been solved, if the appeal in the last instance had been directed to psychology. I give but one example, namely Einstein's famous Theory of Relativity, which, to-day, creates a great division among mathematicians and physicists, as to its value as explanatory relatively to those phenomena for which it was constructed. Now, the psychological analysis of mathematical reasoning in the phase to which I have given the name of "symbolic inversion," comprehending the different geometries of hyperspaces, easily proves that the theory of Einstein is at present simply a mathematical construction, to which, as it is now formulated, no reality corresponds.

To certain algebraic expressions, having a merely numeric or quantitative meaning, without any correspondence to

geometric or physical reality, are given, in the Einstein construction, which also belongs to the above-mentioned phase of symbolic inversion, geometrical and physical denominations such as "space" of four dimensions, "curvature" of our tridimensional space, "tensors" in the space of four dimensions, and so on, such a mode of proceeding being justified, no doubt, by the aid it bestows on the development of the relative analytical calculus. But this proceeding is only harmless if one never loses sight of the artificial nature of such denominations, which excludes the relative algebraic forms from having any such correspondence to that geometric and physical reality as the denominations themselves would induce us to believe. The result is that no explanation whatsoever can be had, when, instead, we attribute to them any kind of geometric or physical reality, as Einstein himself and many of his most ardent followers seem inclined to do.

"To explain," in fact, from a psychological point of view, consists simply in the mental process of deriving, of obtaining certain complex and unfamiliar facts from an imagined combination of other simpler and more familiar facts. Therefore, if one, in order to explain certain phenomena of physics or celestial mechanics, makes use of such concepts as "space" of four dimensions, "curvature" of our tridimensional space, and other similar conceptions, which not only are unfamiliar to us, but which our mind, formed by now by our Euclidean tridimensional space, cannot even faintly represent to itself, no real explanation is given at all.

To the theory of relativity, which is till now, I repeat, a pure and simple algebraic construction, it is possible that some physical reality may yet be found to correspond—if observation and experience succeed in confirming some of its results (which, however, cannot yet be asserted). But the task of the *relativists* ought to be in such a case to endeavour to discover in what this physical reality actually consists, so as to make it comprehensible to our intuition and imagination. Only then will they have the right to assert that they have really "explained" those facts, to explain which their theory was purposely constructed.

Having thus made clear the relations that exist between psychology and philosophy, and psychology and science, it remains for us to give a no less rapid glance at the three great branches or methods of research, into which the study of psychology itself is subdivided. They consist in anatomical psychology (neurohistology), in physiological or experimental psychology, and in psychological psychology properly so called.

Taking into consideration the chief philosophical result given by comparative morphology of the brain in man and in the lower animals, and of the normal and pathological forms in the human brain itself, we find it to be the having established, beyond any possibility of doubt, the fact that this organ is the seat of all our conscious psychical manifestations. This, to-day, may seem almost a truism. But it will not appear so when we remember that even in the age of Descartes this latter and others believed that the human soul had its seat in the pineal gland, which instead to-day is acknowledged to be only a simple internally secretive gland, like many others, in which no real psychical act really takes place.

Nor will the philosophical importance of this result of histological researches on nervous tissues (in which researches, as all know, the illustrious Italian neurologist Camillo Golgi was pre-eminent, along with the great Spanish *sabio* Ramon y Cajal) seem trivial, when we think that the intimate connexion thus proved to exist between thought, or conscious psychical manifestations, on the one hand, and the grey matter of the brain, on the other, has had a most remarkable and fundamental influence on the ancient conceptions of the human soul, formerly believed to be capable of being drawn out of the body without suffering in its integrity.

I hasten to add that this does not in any way imply the narrow materialistic conception of spiritual life as a simple quality or activity of matter. Indeed, it rather means that matter puts itself, with more or less docility, to the service of psychical activity.

Another philosophical result, of great importance, of the study of the brain in its normal and pathological states, is that of having established, beyond any doubt, the fact of the cerebral localisation of the various psychical manifestations, although, till now, such localisation has been understood in too narrow a sense, and this precisely because of an insufficient prior psychological analysis of mental phenomena. So we see that a fixed narrow cerebral seat—almost, I should say, a point,—has been attributed to certain psychical manifestations the complexity of which has not been understood, only because it has been verified that, when these psychical manifestations were lacking during the life of a sick person, on a necropsic analysis of the brain, in determined points of this was found a corresponding destruction of grey matter. Now this by no means signifies that such psychical manifestations had their seat entirely and exclusively in those points, but only that in them had their seat one or another of the elementary

psychical activities, from the composition of which the complex psychical manifestation was derived, and the absence of only one of which had, as a result, the inhibition of the entire complex manifestation.

However, in spite of this too narrow interpretation, of which till now the theory of cerebral localisation has been guilty, and in spite also of the almost complete neglect of the investigation of the seats of the affective tendencies—really the most important of all the psychical manifestations—in spite of these defects, I say, the theory has yet contributed to give greater strength to the conviction that there is an intimate connexion between grey cerebral matter on the one hand and thought—psychical life—on the other; a new conception, I repeat, of fundamental philosophical importance, in view of the ancient conception of the soul as needing no material basis.

The distinction, too, between the grey matter of the brain, in whose nervous centres or neurons seem to be produced the various elementary psychical manifestations (from the extremely complicated interactions of which the so-called "spiritual life" seems to proceed), and the white matter which appears to be only a most tangled skein of filaments transmitting the nervous energy activated in the single centres or neurons of the grey matter—this distinction, I say, between the grey and the white substance of the brain has, so to speak, furnished us with the material vision of the pathway through which the so-called association of ideas, or psychical association in general, takes place,—the association on which, together with inhibition which is its negative aspect, depends the play of all our psychical manifestations, from the simplest to the most complex, from the most vulgar to the most sublime.

As for the second method of investigation of psychical phenomena, it, to tell the truth, has not produced great results either of philosophical or of theoretical scientific importance, if we except that which we are about to consider. It has not, that is to say, greatly furthered the comprehension of the more complex psychical phenomena, nor helped much in the discovery of new psychological laws of much importance.

The only result, just hinted, which it has had of noteworthy importance is that of having established, beyond any doubt, that the psychical life—affectional, emotional, volitive, intellective properly so called, and so on,—has all the characteristics of a real and true physiological function, exercised by the cerebral organ, and that in its physiological

extrinsecations it is not essentially distinguished from other bodily functions.

For instance, in cases of trepanning of the skull, by means of suitable thermometers, with bulbs inserted into the cerebral convolutions, rises of temperature have been observed in the thinking man, that is, in one psychically active, in comparison with the man asleep, that is, in one psychically in functional repose. The metabolism of the brain has been carefully examined, and it has been proved that in the brain in functional activity a larger consumption of oxygen and of nutritive substances takes place, and that there is in it a greater production of carbonic acid and refuse matter, than in the brain in functional repose. And so on.

Without finding in this a justification of the paradox, erroneously attributed to Moleschott, namely, that thought is only "the secretion of the brain," as spittle and bile are respectively secretions of the salivary glands and the liver, these experiments have, nevertheless, I repeat, shown the practical identity, in their physiological manifestations, of even the most delicate functions of the brain with those of any other organ, or any fragment whatsoever of life. Shortly, however, in speaking of the third method of psychological investigation, we shall see that this practical identity between physiological and psychical manifestations, instead of diminishing the nobility of spiritual life by drawing it down to the humble rank of a simple somatic function of purely physico-chemical nature, rather leads to an ennoblement of all the phenomena of life, by raising them to a rank comparable in everything, from a finalistic point of view, to psychical phenomena.

But, except for that result of great philosophical importance,—the having proved the essential identity of psychical and physiological activity,—and for the other of having ascertained experimentally the part taken by certain viscera of the body in the production of our emotions, no great theoretical results, I repeat, of psychological order, have been yet obtained through experimental psychology. I say: *theoretical* results, because it has, instead, given practical results of great importance, in the discrimination of the various psychical aptitudes of individuals, with a useful application of such results, both in the sphere of education and in the choice of professions.

The third method may be said to be the psychological method rightly so-called. It consists in the analysis of complex psychical phenomena either by means of pure introspection, or by this aided by a comparative study of the

conduct of man himself and the animals, and in the reduction of such complex phenomena to others more and more elementary and simple, until the most elementary of all psychical phenomena are reached—those on the composition of which all the others depend. This allows us, then, with a following work of synthesis, to recompose out of such most elementary psychical phenomena all the most complex and varied manifestations of our intellects and of our PSYCHE in general.

That is precisely what we have done in our work on the *Psychology of Reasoning*, in which, starting from the most complex phenomenon of all, namely, *reasoning*, we gradually reached the two most elementary psychic phenomena, no further psychologically decomposable: on the one hand, the elementary affective tendencies; on the other, the sensations or evocations of sensations.

The further analysis, no longer psychological but biological, of these same elementary affective tendencies, and the demonstration we gave of their mnemonic origin and nature, led us to compare the finalistic aspect, inherent in them, with the other finalistic manifestations of the whole of life—from the metabolic phenomena themselves, from those of ontogenetic development, and of adaptation both pre-established and new, to the behaviour of inferior organisms and the play of reflexes and instincts, whether in man or in animals—thus reaching a unitary conception of all the “finalism” of life which sharply divides the latter from all the phenomena of the purely physico-chémical world, and restores to it that teleological nobleness, which makes it one in its totality with the phenomena of our psyche.

From the composition or combination of these two quite elementary psychical phenomena, of the elementary affective tendencies and the sensations or evocations of sensations, we then succeeded in deriving all our complex and marvellous psychical life: our highest aspirations and our liveliest emotions; attention and will; intuition and imagination; the conceptual faculty and that of abstraction; the ratio-cinative faculty in its distinct double aspect of coherence and logicality; the two-fold evolution of reasoning itself, from concrete to abstract reasoning, and from intuitive reasoning to scientific deduction; mathematical reasoning itself, in its various phases of development more and more elevated and sublime, and, finally, dialectic reasoning and metaphysical reasoning—all this marvellous edifice of our mind has been little by little constructed by us, starting from the basis of the two phenomena above-mentioned, which are the real and only fundamental elements of our mind.

We can therefore rightly assert that this third method, namely the properly so-called psychological method, is that which has allowed and alone can allow us to penetrate further and more deeply into that wonderful microcosm, our mind—a marvellous microcosm indeed, if we think of what is reflected in it—the infinite sublime grandeur of the starry universe no less than the infinitesimal mysterious smallness of the electronic worlds,—if we think that in it are surging the most low cupidities as well as the most elevated aspirations, that into it are forged all the elements of human history and of civilisation, that in it especially are prepared and elaborated, slowly and laboriously but surely, those supreme principles of justice and morality through which alone man will mark his definite separation from that primitive animal world, whence he started his first uncertain steps, and move towards the attainment of that harmony of life, thanks to which no single miserable individual life shall exist only for itself, nor any against others, but Life as a whole shall throb in one mighty rhythm of love and joy.

## IV.—DISCUSSIONS.

### JAMES WARD ON SENSE AND THOUGHT.

18th May, 1926.

DEAR DR. STOUT,

I have been reading with absorbing interest your masterly article on my husband's *Psychology* in the January number of the *Monist*. The more I have studied your article, the more I have felt (as I know you will have done in writing it) a depth of regret that my husband was no longer here to further explain his views, or defend himself, on certain points; or (what I think more likely to have happened) to have so developed some of his positions and so modified certain of his expressions that many of the apparent difficulties and inconsistencies to which you call attention would have disappeared. Not all, of course; for he would have been the last person to claim finality for any of his pioneering thought. He was always a severe critic of himself, and filled with almost distressing misgivings about everything that he committed finally to print. Besides, wonderfully preserved as his faculties were, and little as decay of them showed to people with whom he talked, he did, during the last year or two of his life, find 'close thinking' very tiring; and he sadly confessed that he could not tackle any important new work, such as the *Epistemology*, which, as you know, he had for years been hoping to write, and for which he had a good deal of material scattered among his notebooks. Now, I cannot but think that if he had been able to write this *Epistemology*, many of the criticisms which you and others—Dr. Dawes Hicks in particular—have passed upon sections of the *Principles of Psychology* would have been met. This is why I am venturing—most diffidently and humbly—to suggest what it appears to me might have been his line of defence. It is permissible to *surmise* where it is that he would have, as it were, 'taken off' from his own spring-board.

I am encouraged in this attempt by some sentences of yours in a letter to me after his death, and (I think) in one of the 'Obituary Notices'. You say you believed "that there was much more in his work than any one had yet fathomed"; and again that "he may have laid his foundations better than even he himself fully realised".

Let me start by taking as my objective the following statements in your article:—

Page 40 (*re* continuity of sense-knowledge and thought-knowledge) ". . . it seems to me that he does not and cannot show such continuity without presupposing that something is thought of which does not immediately appear in sense experience".

Page 41 (*re* other selves, or subjects, and the apprehension of them) "Thought is involved which transcends the immanence and immediacy of sense." ". . . the thought is inseparably blended with sense presentation and embedded in it. None the less it cannot be accounted for by any differentiation . . . of an original presentation continuum . . . merely sensori-motor."

Pages 46 and 51. "It is misleading to speak as Ward does of a continuous development from sense-knowledge to thought-knowledge. All knowledge and all development of knowledge involves both thought and sense in inseparable unity."

Again, a number of passages concerning self-consciousness which all lead up to the statements: "No attempt which starts from his (Ward's) assumptions can, I submit, be possibly successful," and (page 52) "When once we recognise that thought, however rudimentary, is indispensable to the being of anything which can properly be called an individual self or 'I,' his argument seems to break down."

Among these passages I should single out on page 43. . . . "So far as mental development can be regarded as continuous . . . sense and thought must from the outset inseparably interpenetrate, so as to vary concomitantly and develop *pari passu*."

To sum up: the gist of all your criticism is that knowledge = apprehension of Subject and Object as distinct *reals*, yet in relation, interacting, and leading on to the construction of objective and subjective universes, cannot be evolved from the primordial elements of experience merely by the continuous differentiation of the individual's sensori-motor continuum of presentations, unless more is given in those primordial elements to start with. And you show most convincingly that this is so. But what you do not, it seems to me, show is that in my husband's theory, *taken as a whole*, this necessary 'more' can not be found. I know that many passages in the *Principles* (those in particular which you quote) seem to justify your view. But there are other passages, also quoted by you, which point the other way—as in one or two cases you yourself allow. No doubt when my husband was, as it were, in full career on the scientific psychologist's course, bent on expounding the evolution of the individual's higher consciousness, or mind, from its simplest beginnings, much as a biologist would do the evolution of higher organisms from lower, he did now and again commit himself to statements which were inconsistent—so it seems to me—with his own ultimate foundations. But he never intended to depart from, or explain away, his postulate that the simplest psychical unit—the very essence of being, or living, and the point of departure of all experience was a subject-object *fact* (I do not know how otherwise to express it); and (on this, above all, I lay

stress) that in this fact was involved immediate experience of *change*, as an ultimate experience; one without which there can be no experience at all.

You mention yourself that he gives "*Change as ultimate*"; but you do not lay stress on the fact, or dwell upon its *deep* significance. For on page 45 you say that, "If Ward had started with a rudimentary time perception, what he had to say about its later stages would have retained its full value and have gained in clearness and cogency". But what is "experience" (awareness) "of change" as an ultimate psychical fact if it is not a "rudimentary time perception"? The crux of the whole matter seems to me to lie here. And in certain passages you verge on indicating that it does so.

My contention is that the solution of the main difficulties which you point out in the *Psychology* is to be found in my husband's doctrine of Time. He set great store by this doctrine. It was the one important point of agreement between him and Bergson; and one in which he had in a sense anticipated Bergson. For he had developed the theory in manuscript long before he published it; and had lent the MS. to various people. He wondered at first if Bergson had seen it, but when he met Bergson and discussed the subject with him, he found Bergson had arrived at a similar view quite independently.

Let me now try to state, as best I may, what I think my husband's doctrine amounts to, and what I believe he would have made clear had he written the *Epistemology*.

This primary "inarticulate awareness of time-transience, of no more and not yet" (as you express it) is of course a *condition* of the later perception of time, and of the distinction of past, present and future, as represented by the discrete symbols, *a*, *b*, *c* (in which, of course, *continuity* is lost), but is not to be confounded with it. Experience of change is an experience of transition, and it is the ultimate psychical *fact*, the unit of consciousness. That is to say, as far as our life is concerned, *all being is a becoming*. Changelessness = non-existence. To be is to be aware of change. And this awareness involves the subject-object relationship as an ultimate fact in experience.

This holds of the very lowest ranks of being, as well as of the highest—of the beginnings of life in the embryo, in the ameba, as well as of every sensation, thought, and action of the most highly evolved individual. In this primordial "awareness of change," what is later perceived or conceived as time, present, past and future is in a sense transcended; or, rather, I should express it, what we come later to distinguish as 'present' is transcended. A pure momentary or mere *present* existence (if such a thing could be conceived) would be nothing from which any 'experience' could be built up; any more than space could be constructed out of *pure* mathematical points. The *pure* point cannot be a *constituent* of space.

In this ultimate psychical unit, "awareness of change," we find

that germ of thought which is necessary to the psychological evolution of the individual, to the gradual reflective discrimination of subject and object and to the final building up of the objective and subjective universes as in knowledge.

In what is slipping away out of the focus of attention we get from the first that 'otherness' which is the basis of objectivity—of the *not self*; and in the feeling—the liking and aversion—which is of the very essence of the subject and the condition of all its activity we get the self stretching after, or revolting from, that which is passing away, and which is therefore distinguished from itself as something 'other'.

Since attention—the activity of the subject—varies the content of consciousness—the field of presentation—it must be directed to something not fully there, to an object in birth or vanishing. This is so whether the attention is voluntary or involuntary = forced. One discerns this more clearly perhaps in regard to the object coming into focus, and which the *feeling*—or activity of the subject (*for to FEEL is to WILL towards or from*)—draws into the focus of attention, or repels from it. In such an attitude there is awareness of something other than the feeling, acting subject, having an existence before as well as after it is focused in consciousness, or *fully presented*. Subjective activity, action being of the very essence of the subject and involved in feeling, is only possible, only conceivable, if what is passing away in experience, and what is coming in, is grasped in one by the subject. The experiencing subject is objectifying his own changing presentations all the time.

It is difficult to express this without using what may seem to be not only question-begging terms but terms which imply the memory and imagination which are finally developed from this primary unit of psychical being, but which are not there to start with, any more than perception of time proper is there. For in this experience of transition the *present*, as I have said above, is transcended, that is to say, there is no *pure present* in experience.

Such a doctrine as the above, it may be objected, is not psychology but metaphysics. But all sciences are rooted in the metaphysical; and psychology of course most intimately and primarily so.

It seems to me further that such a doctrine as this of the nature of the ultimate psychical unit which awareness of change involves is implied in the very conception of a continuum, be that continuum either of the subjective or objective universes as finally evolved in thought. A continuum cannot be a collection of psychical atoms—so to say—however closely they are supposed to hang together. They *interfuse*; they are elements in a '*becoming*' which only the above doctrine of the subject's immediate experience of change makes intelligible. This being so, to speak of the growth of experience from its lowest to its highest developments as being a gradual differentiation of a sensori-motor *continuum* of presentations is, in itself, to posit (as my husband does), as a necessary

starting point, the psychical unit of 'subject-object' related and conditioned in and by change.

Yours sincerely,  
MARY WARD.

Craigard,  
St. Andrews,  
May 23rd, 1926.

DEAR MRS. WARD,

I have read your comment on my *Monist* article with the keenest interest. I am very glad that you have written it. I think also that you ought to publish it—with such changes, if any, as may be suggested by what I have to say in reply.

I do not approach your husband's work as an external critic, but rather as a disciple seeking and in a large measure finding in it a basis from which to develop his own. It is therefore natural that much of my criticism—so far as it is valid—is such as he might, on later reflection, have passed upon himself. This applies to the general treatment of the sense-thought question. On this point I have only to add that I do not rely merely or mainly on positive statements *pro* and *con*. I am more impressed by the *absence* of positive statements where, if I am right, and if Ward really agrees, it is very important that they should be forthcoming. I miss them in the account of the general nature of attention and conation, and also, broadly speaking, in the whole exposition of the course of mental development at least up to the stage in which trains of ideas emerge. It does not seem to me to be the reader's fault if he take this to be concerned exclusively with the plasticity of the sensori-motor continuum. I have no doubt that your explanation is correct; that "he was in full career on the scientific psychologist's course" and so tended to assimilate his treatment of the subject to that of the biologist tracing the evolution of organic life. I agree also that if this is a true account of his procedure, the defect which I find in it may well be referred to an oversight which he might have corrected without departing from his fundamental principles. None the less, to take this view is to admit that there *is* an oversight which cannot be regarded as unimportant. We have to admit that, for the time being, he was misled by biological analogies, as his predecessors were misled—far more seriously—by mechanical and chemical analogies.

What you say about the "primordial awareness of change" is extremely interesting and important. When I read your own exposition (pp. 454-5) I feel that it *almost* meets my difficulty. I must explain why I say "almost" instead of "quite". I am of course fully aware that according to your husband (and I quite agree) it is an essential condition of individual experience that it should be in incessant change. Further, this is implied in the doctrine of the presentation continuum and also in that of attention. Again, at

every step there is retentiveness: the result of previous process is carried forward into succeeding process. But all this does not give me what I require. It does not of itself involve any *distinction* on the part of the subject between what is, what was and what is to be. There is *in fact* a *now*, a *no more* and a *not yet*, but the *now* need not be, even in the most rudimentary way, distinguished from the *no more* and the *not yet*. That this holds good for your husband's "primordial experience of change" as he conceived it in the *Principles*, is plain from his own clear and emphatic statements. Turn for instance to page 212 of the *Principles*. "It is true that experience is impossible without change and true also that the concept of change implies time; but it is not true that the experience of change involves the perception of time." Here it is essential to fix what is meant by *the perception of time*. But on this point he leaves no room for doubt. "In perceiving time what we perceive is just relations between changes." So far I can follow. I agree that at whatever stage the distinction (as opposed to the mere difference) of the present from its past and future arises, the distinction is between change present, change past, and change to come. I agree also that though each of these changes must include succession, yet we need not distinguish *within them* what precedes from what follows, or indeed be aware of any relation of before and after at all. The stumbling-block for me is your husband's very definite and explicit doctrine that even a rudimentary perception of time as a "relation between changes," far from being primitive, does not and cannot begin until mental development has reached the advanced stage in which there are trains of free ideas. I can find no way of accounting for this position except by supposing that he had allowed himself to slip into the habit of regarding previous development at the perceptual level as merely sensory, *i.e.* as consisting in the differentiation of a sensori-motor continuum. It seems to me that if he had been guided by the view of perceptual process as involving the inseparable unity of thought and sense, he would have referred the beginning of time perception to a much earlier stage, even if he had not made it quite primitive. In the passage on page 212 the only view which he takes into account as a possible alternative to his own is one which "would talk of 'time sensation,' or suppose that the experience of change is *ipso facto* an immediate experience of time transience". Rightly rejecting this position, he straightway takes for granted that time perception can begin only with free ideas. Later on when he comes expressly to deal with thought he recognises that it is present in a rudimentary form even in the most primitive experience.<sup>1</sup> "The difficulty," he says, "in distinguishing between sense and understanding we may now fairly attribute to the fact that there is no sharp distinction—unless, indeed, we go to

<sup>1</sup> The relevant passages are, however, absent in both editions of the *Britannica Article*. They occur first in the *Principles*.

the length of maintaining that in sense we are purely passive and in 'understanding' purely active" (*Principles*, p. 294). This gives me all that I require. It even goes further than I am prepared without hesitation to follow. For it implies that where there is no vestige of thought there can be nothing in the nature of activity. I should like to say this too. But I feel bound to concede to Bradley that there might be a primitive experience in which conation, if we may still use the word, would take the form of an absolutely blind restlessness issuing in movements, etc., which tend to continue until it is allayed. In such *quasi*-conation, the individual, if we may still call him an individual, would have no sort of clue to what he wants. He can therefore be said to want or seek it only from the point of view of an outsider, as some one may be said to "want" a good thrashing, or as water may be said to "seek" its own level. If we start from this as the most primitive form of conation, the transition to higher stages which involve thought must be, in principle, discontinuous. But I hesitate to affirm dogmatically that such discontinuity would be impossible. All that I can say and do say is that the evidence does not seem to demand it and that the burden of proof rests with those who assert it.

I have referred to this problematic conception of a conation which, being purely sensory, must therefore be entirely blind, in order to note that your husband's own position, in such passages as that on pages 294-295, takes no account of it, and by implication excludes it. His view is rather that wherever there is conation at all there is some prenotion, however vague, of what is wanted—a prenotion which serves in some degree as a guiding clue. To me this seems sound doctrine; but I must repeat that if it is sound there are points in his previous exposition of mental development which seriously require revision—more especially the account of time perception. Consider, for instance, what he himself gives as the most primitive form of conation, 'that in which the only clue to what we seek is "anything, anything, only not this"'. Where the painful situation is at all intense and prolonged, there must, I should say, be for the animal itself an emphatic contrast between the actually or "immediately" experienced present and change in it which is thought of, but *ex hypothesi* is not yet *actually* experienced. I cannot admit that in such cases the distinction between the "now" and "not yet" is transcended. That the "not yet" is very vaguely defined, does not seem in this respect to make an essential difference. In other situations, *e.g.*, when the state of struggling discomfort suddenly issues in marked relief, or comparative relief, there will be a similar contrast between the *now* and the *no more*. All depends on the predominant trend of interest: and since this, as your husband somewhere says, is, at first, mainly "upstream," the distinction between present and future will have a certain priority over that between present and past.

I said that in reading your own statement of what your husband's

doctrine amounts to, I almost felt that it fully satisfied my requirements. Why "almost" and not "quite"? My first impulse was to put my own interpretation on what you say. So interpreted, I could welcome it as a very good statement of what I myself take to be true and vitally important. But I was still troubled by a misgiving due to your previous assertion that in the more primitive experience, previous to free ideas, "what is later perceived or conceived as time present past and future is transcended," where by "transcended" you clearly mean that the *distinction* is not apprehended. You mean, I presume, that though present past and future enter into the constitution of experienced change, they are not discerned within it. Now I fully admit that there is such change-experience in all stages of mental development. But I cannot admit that there is nothing else, before the time-perception becomes articulated in trains of ideas. If, then, your account of primitive conation and attention as essentially involving the *now*, *no more*, and *not yet* is taken as compatible with the view that they are always transcended, there must be an important disagreement between us. On further examination I find that your statements are capable of being interpreted, though not very naturally, as applying, in the first instance, to conation conceived as mere blind restlessness. This would come first and that "otherness which is the basis of objectivity" would be gradually developed. Now I admit that as a matter of chronological order this is possible. But the supposed transition from mere sense to thought would be in principle discontinuous. Further it must, I urge, take place, so far as time distinctions are concerned, at a far earlier stage than that to which Dr. Ward refers time-perception.

Let me now add that I believe that if your husband had lived to write his epistemology he would have grappled with these difficulties and that in all likelihood he would have found a satisfactory way of meeting them.

I was impressed by a remark he made to me the last time I saw him. I had been speaking about thought and sense, in the same way as in my *Monist* article. Unfortunately I cannot remember the words he used in reply: but they were certainly to this effect. "That reminds me of a difficulty which I have often [perhaps he said "always"] felt in dealing with time. In time-perception what is given is a number of simultaneous images which are all equally present. How do we pass from this to a past and future which are not present?" He had already very definitely raised the same question in the *Principles* (pp. 213-214). So far there was nothing new in what he said. What seemed to me to be important was his readiness to recognise the relevancy of the general problem of thought and sense. Taking this together with the later passages of the *Principles* in which he clearly asserts that thought "in the wide sense" is primitive, and bearing in mind that these passages are absent both from the earlier and later editions of the *Britannica* article, we may fairly infer that his mind was moving in a direction

which would have led him to meet my criticism either in my way or in a different way of his own. On the other hand, the way in which he deals in the *Principles* with the special problem of time-perception, indicates that he was, more or less, groping. For he does not in this context make any reference to thought. He does not say, for instance, that though we think simultaneously of past, present and future it by no means follows that we must think of them as simultaneous. On the contrary, he seems to suppose that the difficulty is met by a reference to the reproduced residua of movements of attention which only raises the same question in a new form. For such residua belong to present experience in the same way as the images. Of themselves they only add to the complexity of the image a character due to previous attention. What I take to be right in all this is that the solution is to be found in the fundamental nature of attention as involving *thought*.

Yours sincerely,  
G. F. STOUT.

*To the Editor of MIND.*

July 7, 1926.

Without attempting to reply at all generally to Dr. Stout's interesting and searching criticism of some of the arguments contained in my letter—a letter addressed to him originally quite personally and without any idea of its being printed in *MIND*—may I be permitted to insert the following note after his letter, as it may serve to make clearer certain points of the discussion?

First: in regard to the unsatisfactoriness that Dr. Stout finds in my husband's account of time-perception as a "relation between changes"; and the "breach of continuity" which he thinks even my interpretation involves. I cannot see that there is this breach; because what later appears as 'present' in the relationing of changes is only relatively so. Since change is ultimate in experience this 'present' contains the germ of the 'no-longer' and 'not-yet'; and this gradually and continuously expands into the larger, more definite changes finally distinguished as past present and to-come. The whole perplexity here seems to me to arise from the difficulty we naturally have at our present psychical level not only of intuiting the primordial in experience but of finding terms to express it. We can scarcely think or speak of the primitive without employing the perceptions, the clear distinctions, of *this* and *that* which finally emerge. We cannot grasp the psychically infinitesimal. We make a leap from what we must postulate as the primary unit of consciousness—the starting-point of experience—where there has been no leap but only a gradual extension of its immediate subject-object content, conditioned by continuous change. In using the phrase "the present is *transcended*" in trying to express the fact that there is no *pure* present, I see the term "*transcended*" is misleading.

Secondly: as regards primitive activity and its first form being

"blind restlessness". Fully agreeing that "where there is no vestige of thought there can be nothing in the way of activity" I should still urge that this 'vestige' is to be found in what is called the individual's "blind restlessness". It is only *comparatively* 'blind'. (Here again, I think, the difficulty is to intuit and express the primordial.) The individual *wills-away* from what he is experiencing and in so doing, objectifies, in however elementary a degree, his unpleasant experience. He is a subject with an object, which object he dislikes. What he seeks may not be a *definite* '*something else*'; but it is a *not-this*. And since his experience is continuously changing there must be in it the presentation of *more* and *less* discomfort or *dis-ease*. These vaguest of objects are those he shuns and seeks.

MARY WARD.

### MR. RANDLE ON SENSATIONS AND PROJECTION.

THE "generative" theory of appearances which I set forth in recent numbers of *MIND* was based on the view that reality, though spread out in space, is of the nature of sentience—"something midway between mind and matter"—and that appearances arise through an effort of the organism to enter into relation with its environment. It was not to be expected that this theory would meet with a welcome or a ready understanding from those, whether phenomenalist or agnostic in their type of philosophy, for whom appearances are ultimates and sentience a superfluous conception. I am therefore not surprised that Mr. Randle, whose article in *MIND* for July, 1922, was meant to be a refutation of the existence of sensations, should be unwilling to admit the "states of sentience" which must exist if there are to be such processes as projection and simplification. He has said nothing in his discussion about the latter process, and I assume therefore that he rejects also Bergson's "contraction" and regards minute parts of time with bare sense in them as no less inadmissible than minute parts of bare sense in space. If, on the other hand, it be allowed that experience is in time and that time is infinitely divisible, we get at least minute temporal parts, which by analogy make for the existence of minute spatial parts as well.

What is really in question is the existence of the subject, and the nature it must have in order to be in that relation to objects which we call awareness. Does Mr. Randle think that the brain, conceived in the ordinary way, can be aware? A psychology content merely to correlate appearances with brain-processes, it seems to me, has *omitted* the subject: for appearances cannot be aware of themselves, or have awareness—a "bi-polar" relation—in them (particularly if they are identical with objects!). The reduction of perception to appearances is the denial of anything to which they appear, the abandonment of awareness as a relation that comes into existence when we begin to perceive objects and goes out of existence when we cease to perceive them. Such a view is not only psychology without a soul, but psychology without consciousness. My conception of sentience is an attempt to repair this defect, and re-introduce the subject.

I cannot take it very ill of Mr. Randle that he has not understood what I mean by sentience. I was forced, for lack of space, to set forth the matter so succinctly that I fear none but those already in possession of the conception were able to understand me. I hope to discuss this matter at length in an early article. But I may say

now that I shall start out from James's paper, "Does 'Consciousness' Exist?" and endeavour to show (1) that James is right in so far as he maintains that awareness is neither an actual nor a possible datum of experience; (2) that, nevertheless, we *are* aware, and that it is the duty of philosophy to explain how we can learn of the fact; (3) that appearances have a *being*, of a peculiar sort—what some people call their "existence"—which is identical neither with awareness nor with givenness; (4) that this being, as may be seen from the case of pain, and less plainly in the case of sound, light, and colour, is of the nature of feeling; (5) that through this peculiar being of appearances we become aware of our own existence—the existence of that by the projection of which the appearances were made to appear; and (6) that, when once we have thus become acquainted with the existence of the subject as well as with that of the object, we may learn, by putting them together in thought, that there has been on a particular occasion a subject-object relation—that is, awareness. I venture to think that no other theory than this can give a satisfactory account of the way in which our knowledge of awareness is obtained.

When I spoke of sentience as constituting the "inner being" of the brain-process, I meant that it is that which occupies the space which an anatomist or microscopist would be looking at if he could contemplate the living brain, but that it does not and cannot appear to perception in its true nature—its true nature being given only to introspection, the form of cognition by which we apprehend sentience. Thus the conception of states of sentience as "copying" brain-processes, which Mr. Randle rejects, seems to me to supply the middle term necessary to making not only the genesis of appearances and their relation to a subject, but the connection of mind and body intelligible. He says that "there is no difficulty whatever in understanding that" a given stimulation causes the rise of a given appearance. There is a great difference between understanding *that* and understanding *how*. Can he tell us how appearances are generated by the brain? Or does he think that there is no problem of the connection of mind and body—that the nature of their connection is beyond the reach of human faculty? If so, he seems to me like a person who should declare that the origin of species, or the peculiarities of crystals, or the connexion between the chemical elements was necessarily unintelligible. "Puzzles" are indeed non-existent for those who shut their eyes to them, or whose premises exclude them.

Perhaps a more careful reading of my articles might have preserved him from some misapprehensions as to the nature of the process there called projection. The essential point is the rôle which motor response (and the motor sentience, if we admit it, that accompanies that response) may play in contributing certain characters to the appearance. The characters in question are distance, with its strange absence of quality, its transparency; and the enlarged magnitude which goes with distance, and which seems

to vanish when we compare objects at different distances with one another. These characters are present in auditory as well as in visual appearances. They are readily explained if we suppose that they are imputed to bare visual and auditory sensation by our tendency to react in a certain way, and that our feeling of them is the motor sentience accompanying the reaction. Mr. Randle rejects my explanation, but I do not find that he has suggested any alternative theory.

Now my thesis was that not merely the distance and magnitude, but the very *externality* and opposition to the self of colour, sound, odour, solidity is such a behaviouristic or, as I called it, factitious character. But for the illusion which action creates, the fiction in which it indulges, these qualities of sense (in unsimplified form, to be sure) would be qualities of *us*—of sentience—and not objects given to us. The motor tendency is of course automatic, not conscious. The body (if, for the sake of making the conception clear, so crude a form of statement may be permitted) has lied to us about the place of the sentience, declaring that to be outside which is really inside. Mr. Randle would have understood me better if he had borne in mind my repeated statement that projection is *fiction, illusion*.

Or (to state the matter in a finer way) sentience has by the aid of reaction been made the vehicle of a meaning, the meaning “a distant object”. Understanding, as well as mere sense, is necessary for the perception of distance. To behave suitably, on occasion of an affective state, is to understand by means of that state. The new-born babe who feels the nipple and grasps it in its lips understands that something, which we call a nipple, is there. Such intellection is not of the discursive kind by which we interpret appearances when once they have been made present to us; it is a purely apprehensive understanding necessary to their being given at all.

Suppose that the baby had from birth (perhaps because it was the victim of congenital eye-weakness) been made to wear blue spectacles. It would imagine all things to be really blue. This would be an illusion, due to its reacting as if the blue were in the objects and not close to its eyes. It would not be an *apperceptive* illusion—the baby would not have first seen the blue, and then interpreted it, by means of an erroneous apperception, as external: but the externality and definite distance would have been given originally with the blue, to apprehension. It is by an illusion such as this, only consisting in the projection of something even nearer to the subject than the blue of the spectacles—namely, his own nature—that I conceive the externality of appearances, and therewith their antithesis to the subject, the subject-object relation, to be brought about.

There is therefore no such dilemma as that which my critic presents to me: either a metaphorical or intentional projection, by means of apperceptive interpretation, or else “ectoplasmic extru-

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sion" of the sentient substance of the brain. Mr. Randle would not wish, I am sure, to caricature a theory which his phenomenalist prepossessions (or addiction to psychical research?) have prevented him from understanding. If he will look into the matter without bias, he will find that intention or intent—the reference of the subject's state to an object, which is what projection comes to—enters into every apprehensive act. I don't think he realises what an old-fashioned philosophy it is I am advocating: belief in a soul (though a pluralistic one), in psychical states, and in the presence of intellect in the simplest act of knowledge.

My only regret is that the definition of reality as "sentience"—even when qualified by the statement that sentience is also impulse—leaves too much in the background the material side of the conception: the infinite subdivision of sentience in space and time, its identity with energy, and the extreme lowness of any form of it that can be supposed to exist in inorganic matter. Taking these things into account, perhaps Mr. Randle and I do not differ so much, after all, as to appearances being generated by the brain.

C. A. STRONG.

### THE TRUTH OF PROPOSITIONS.

THE account of the truth of propositions which I gave in Number 138, seems to me not only to have been relevant to Dr. Schiller's treatment of the question in his criticism of Bradley, but also substantially to embody the fundamental objections to his theory as restated in Number 139, under the heading *Judgments versus Propositions*. I cannot, therefore, hope to avoid repeating, and perhaps labouring, points that I have already made, but it may be possible for me in further discussion to make the issues clearer. Dr. Schiller dwells on the difficulties and errors that arise from confusing propositions with judgments, and the sort of truth we can attribute to the one with that which can be claimed for the other. I should agree that it is highly undesirable to confuse propositions and judgments, if by "judgment" is meant *judging*; but, if so, there is no question of the truth of judgments, since, as I said in my previous discussion, it is for what a person judges, and not for his judging, that truth is claimed. On the other hand, if "judgment" is taken to mean *what is judged*, then I should deny that there is any distinction between judgments and propositions, and so any question of different sorts of truth. If to argue along these lines is to raise "the issue of Realism *v.* Idealism," I do not see that it is irrelevant to the points in Dr. Schiller's discussion of Bradley which I was criticising. Since what is judged is commonly not in a psychic setting, "truth in a psychic setting" can hardly be claimed for it.

But I argued further that even if we consider the actual conditions of what is judged, we still cannot claim for it "truth under those conditions" or conditional truth; that, unless we can think of it as having unconditional or unqualified truth, we cannot call it true in any sense. It is not a question of the "formal independence of truth-claims," but of the *claim of independent truth* which we make whenever we assert anything as a matter of fact, *i.e.* whenever we assert anything at all. I had argued that Dr. Schiller's theory was sceptical, because it denied that assertions (things asserted) were to be taken as simple matters of fact, or the reverse, and so implied that no definite assertion could be made. But the point can equally well be put by saying that any theory of the kind is illogical, since it can only be upheld by the making of statements of supposed fact. Now such statements are propositions. It appears to me, therefore, that this line of argument was strictly relevant to the attempt to show that, so far from adherence to propositions being capable of inducing scepticism, scepticism can only

be avoided by insisting on claims to unqualified truth and rejecting claims to "truth in a context". If Bradley aimed at both absolute truth and truth under conditions, he would necessarily arrive at a negative result. What I am maintaining, as against Dr. Schiller, is that the aiming at truth under conditions must have been responsible for this, and not the aiming at absolute truth.

This "absolute truth" is, of course, just the truth that we claim for what we definitely *believe*. There is no question of truths of which we can be eternally certain, of beliefs which under no conceivable circumstances could we give up. Any proposition whatever can be denied, *i.e.* can be conceived to be false; and we have all had experience of giving up beliefs which we once confidently held. But while we held them, we held them to be absolutely true; we could not *then* imagine that there would be circumstances under which we should give them up, since we took them to hold quite independently of us. Otherwise, we could never have had any need to give them up, nor, if we had come to think differently, should we have thought that we were previously *wrong*. The point is, then, that at any given time there are certain things that we believe and, in so doing, regard as matters of fact. And if there is anything about which we are uncertain, what we are uncertain about is whether or not it is a matter of fact; we do not regard it as a matter of "uncertain fact". Experience has shown us that we make mistakes, but it could not show us anything at all unless we sometimes made no mistake. Thus the mere possibility of contradiction, the general consideration that "we may be wrong," could never lead us to give up a particular belief that we held; only a belief in other propositions which disprove it, could do so. The very fact that contradictory views are held is sufficient to show that some beliefs are true. Now when any belief is true, what is believed (the proposition) is something that has occurred; and when a belief is false, it is still, in being believed, *supposed* to have occurred. To speak, on this basis, of "absolute" truth, while it may be said to add nothing to the notion of occurrence, at least emphasises the fact that we cannot speak of relative or conditional occurrences.

I had contended that to reject this view of the truth of propositions, "it would be necessary to show that we do not mean by a 'truth' something which actually occurs". But though this view is equally opposed to "correspondence" and "coherence," Dr. Schiller has not dealt with it in arriving at the conclusion that "the sense of 'truth' which a 'proposition' may fitly claim would seem to be either that which is involved in the 'correspondence' or that which is involved in the 'coherence' theory of truth". I shall not attempt to elucidate these "claims," since if it is possible for a proposition to claim to be a matter of fact, there can be no other sense of truth to consider. I still maintain that what is "proposed" or supposed in a proposition is a certain state of affairs, and that whoever believes the proposition takes that state of affairs

to have actually occurred—as he indicates by the use of the copula “is”. When, for example, I invite anyone to believe that Bradley is sceptical, I ask him to consider the actual Bradley and whether in his works he displays the actual characteristic of scepticism. I might attempt to prove my point by argument, but what I should expect to be proved at the end of the argument would simply be the occurrence (truth or fact) of Bradley’s scepticism. In general, then, when a person formulates a proposition, the copula indicates that he thinks something has occurred, and the terms (the different functions of which need not be considered here) indicate *what* he thinks has occurred. In other words, a proposition is something which can be thought to have occurred or not to have occurred. But thinking that something has occurred is simply judgment, in the sense of judging. Thus when we speak of judgment in the sense of what is judged, we are speaking about a proposition; and the proposition or judgment is true, when the supposed situation *has* occurred. There is no question here of how we know this, how we can be “sure of our facts”. It is sufficient that we have beliefs, and that this is what they mean; that believing something and believing that it has occurred are the same thing. It still seems to me that this line of argument suffices to dispose of any theory which takes truth to depend on adequacy or relevance, or, in general, to be a matter of degree. We cannot think of situations as more or less occurring or as conditionally occurring. There are, as I said, cases where we assert that *A conditions B*, but then we take this whole situation as an absolute fact. In short, there can be no intermediate stage between absolute occurrence and absolute non-occurrence.

The difficulties about verbal forms and ambiguity, which Dr. Schiller again raises, seem to me to go no way towards showing that a true proposition ought to be said at best to “correspond to a fact,” instead of to be a fact. If a proposition were merely a form of words, and words had that arbitrariness which he appears to assign to them, I do not see how it could even *correspond* to a fact. And the same can be said, if for “proposition” we substitute “statement”. By a statement we mean something *stated* by means of words, and by literal truth and literal falsity we mean that the propositions so stated are either truths conveyed by words or falsehoods conveyed by words. Dr. Schiller thinks that if I demand literal truth, I have made for myself a short cut to scepticism, since “literal truth is *at most* only verbal, and, for the purpose of determining real truth, quite inadequate. It is for example bowled over by the slightest hint of ambiguity.” Yet we all make statements in words and *believe* them, and hence believe that any one who denies them is wrong; and, as I said in my previous discussion, “no one will deny” (and Dr. Schiller has not denied it) “that knowledge of actual occurrences *is* conveyed by means of words.” It is not at all necessary for me to maintain that misunderstanding never occurs, but only to point out that understanding occurs and to

indicate what sort of thing it is that is then understood. There could not be understanding of statements, unless it were false that a statement "always has, in principle, a *plurality of meanings*". The principle of verbal communication is that the set of words used in making a given statement should have only one meaning. This is the principle that we employ in learning any language, our own included. There are exceptional cases where the same word stands for several distinct sorts of thing, and in these cases, as I pointed out, misunderstanding is commonly removed by the use of *other* words. But for the most part the distinct things we have to know are a certain arrangement of words, an occurrence of a certain character and the fact that those who understand the language think of the latter when they see or hear the former. This may be a state of affairs which has not "passed unobserved by anyone," but it has to be pointed out in order to reinforce my previous contention that misunderstanding of words and misunderstanding of things are on precisely the same footing. Persons may make *mistakes* about words, but this does not render it impossible for a language to be understood and thus for literal truths to be believed and communicated.

In denying this, Dr. Schiller, though he claims to have made a clear distinction between the truth of propositions and that of judgments, has not really shown what he means by "the 'truth' (in general and in the abstract) of a 'proposition,'" or what is the "verbal meaning" to which formal logicians are supposed to confine themselves. In general and in the abstract any word might mean anything, and thus on a merely verbal basis there could be no such distinction as that between true and false propositions. But formal logicians surely proceed on the basis of the fact that, since we are capable of knowing what words mean, we can believe or disbelieve statements in words, *i.e.* find them literally true or false. And Dr. Schiller himself, when he objects to the assumption "that the mere hearing of a proposition, which once formulated what seemed a truth in the judgment of its first discoverer, will suffice to re-start the same process in any mind that hears it," has implicitly conceded, in the words "seemed a truth," all that they require for their purpose. What was it that it seemed, and what was it that seemed so? It was a *state of affairs* that seemed (was judged) to have occurred. If words do formulate such suppositions and if they ever enable a hearer to make the same supposition, then true and false propositions can be stated and understood without being "verbal". But it does not appear, on Dr. Schiller's theory of propositions, how a proposition could ever seem to formulate a truth.

It is equally difficult for him to account for the notion of "seeming true" in terms of his theory of the truth of *judgments*. He wishes to consider "what the actual judgment meant" and to "discount as irrelevant the formal truth-claim made by all judgments true or false". But we cannot leave the claim aside without

explaining, as Dr. Schiller does not do, what it is that is claimed; and it can hardly be denied that the person judging *means* to make this claim. All that would remain, if it were removed, would be the material, the terms, of the judgment, and they do not by themselves make it a judgment or convey what it means. The truth a judgment claims, then, and the truth it may possibly have, is what is indicated by the copula; *viz.* occurrence. It is certainly not adequacy to a situation, for if anything was claimed as adequate to a situation, it would be its adequacy that was said to have occurred. This line of argument is in accordance with my previous criticism of "contexts". I pointed out that in his original discussion (No. 134, p. 221) Dr. Schiller had said that "the judgment means that in view of all the circumstances present to its maker's mind and judged relevant by him, he has judged it best to make his judgment". That is to say, when a man judges that A is B, he has *ipso facto* passed the judgment, "Judging that A is B is the best I can do under the relevant circumstances". The infinite regress involved in attempting to maintain this position is obvious. On the other hand, it is equally obvious that the man is supposed, in the second place, to make a judgment of fact—"Judging that A is B *is* the best," etc. Similar criticisms may be passed on what Dr. Schiller now says—"The making of a (*bona fide*) judgment thus *ipso facto* implies its maker's belief that it *was*" (my italics) "the best response to the circumstances which he could conceive." If he can make a judgment of fact in the second place, there is no reason for turning his *original* judgment from a claim to truth in fact into a claim to "truth in a context". Dr. Schiller contrasts the discussion of the truth of a judgment, as a question of *value*, with that of its meaning, as a question of *fact*. But if there is such a thing as a matter of fact, surely that and that only is what we mean by truth.

I should therefore maintain that Dr. Schiller has not made it clear what he means by the "truth of judgments," any more than by the "truth of propositions". It may be admitted that whether or not we pass a certain judgment will depend on our purposes, and again that there is a distinction between judgments which are relevant to a certain inquiry and those which are not. But this has nothing whatever to do with truth; a relevant judgment may be false, an irrelevant one true. It may be more to the purpose of a certain discussion to consider whether a penny stamp is scarlet or not than whether it is red or not, but this fact will not enable us to determine whether it *is* scarlet. Moreover, if it is scarlet, it is also red, while if it is red, it may not be scarlet. Thus Dr. Schiller has said nothing to show that being relevant makes a statement true. He has correspondingly not shown how being "misapplied" could make a 'proposition' false. "Even the best and 'truest' form," he says, "will not be applicable to all situations." But the only situation to which it could be supposed to be "applicable" is the situation which, it says, occurs. I can only assume that the

question is of implication; that, for example, we should "misapply" the proposition "All men are mortal," if we proceeded from it to believe that "All chessmen are mortal". But what this meant would be that we had supplied a minor premise "All chessmen are men," which is false, and which is therefore capable of leading to false conclusions. It does not, accordingly, appear either that a true proposition can by itself imply false conclusions, or that one proposition can be an "application" of another.

This raises the question of distinctness and connectedness, what a proposition or group of propositions implies being something distinct from itself, though connected with it. Dr. Schiller, in his criticism of my remarks on selection, takes no account of my statements that things which are connected are at the same time distinct, and that a number of distinct things may be taken together as constituting one thing (as articles of furniture constitute a suite) without being any less distinguishable. Had he done so, he could hardly have referred to my "assumptions that there is only one way of selecting and that its objects are all distinct and lying about waiting to be recognised". I gave definite examples of different ways of selecting and of the embodiment of one thing in another (though the two are still different things). And I pointed out that though "the truth of the matter is independent of our consideration," our interests may lead us to consider various combinations and components of things. I cannot therefore consider myself entirely responsible for the obscurity which Dr. Schiller finds in my argument. I repeat that unless we can speak of things independently, speak of them, that is, as simply occurring and not as "conditionally occurring," we cannot make intelligible statements (or have beliefs) at all. The fact that there are conditions under which a state of affairs occurs, does not make it occur conditionally; it occurs and can be known to occur even if its conditions are not known. As before, I can know that Bradley was sceptical without knowing under what conditions he became so, or under what conditions in general scepticism arises.

What I was primarily considering, in discussing "selection," was whether knowing a distinct state of affairs in the above way could be so described; whether, as I said, selection "is an admissible description of judging". And I concluded that we might be said to select occurrences, in that our interests and purposes led us to consider certain occurrences and not others. What I denied was that our selection of a predicate for a selected subject could possibly be prior to any question of truth, since predicating one term of another is stating what we suppose to be true; and that we required a "right" to select, since, though we may choose or select certain objects of interest to us, we do not choose to select. Before it can be said that we exercise a right to select, it would have to be shown what would happen if we did not; but this could not be shown—knowledge of what was "neither one thing nor another" being quite inconceivable. *Prima facie*, then, the practice of speaking

about distinct things stands in *no* need of justification. There is no distinct thing called "the real" which can be spoken of as a "continuum," and which requires to be broken up before any other thing can be spoken of. Unless things were first of all distinguished, we could never "find from experience that great masses of reality are in fact irrelevant to our purposes and may safely be neglected"; hence this cannot be given as a *reason* for selecting. We can certainly "select wrongly" in that we may take things to be distinct which are not so, or things not to be distinct which are so, but we cannot consider whether we are entitled to make distinctions or not, since any sort of thinking involves distinction. In accordance with this view it should be said that truth is to be sought not in concentration upon "parts," but in consideration of things or description of occurrences.

I have tried to show the importance of the fact that such descriptions are either true or false. I admit that we want to know *whether* they are true or false, but we cannot come to a conclusion in any given case by considering "rights" or statements of logical theory; we can only do so by observation or, in general, by reference to propositions which we believe. And the nature of belief requires the rejection of any theory of distinct *sorts* or different *degrees* of truth; truth being simply what is represented by the copula "is" in the proposition. Any such theory, or any view which attributes different meanings to "is," is inherently sceptical or illogical, since only by the use of the unambiguous "is" of occurrence (as I have shown in relation to Dr. Schiller's view, in particular) could the theory be formulated at all. We must think of propositions, therefore, as capable of being unconditionally true; a consistent adherence to the treatment of them as merely verbal forms would not allow of any enunciation of belief, that is, of any "judgment".

JOHN ANDERSON.

## V.—CRITICAL NOTICES.

*Contemporary British Philosophy. Personal Statements* (Second Series). Edited by J. H. MUIRHEAD, LL.D. London: George Allen & Unwin, Ltd. Pp. 365.

THIS is a difficult book to review. In most books on philosophy it is possible to find a definite end which the writer has set before himself. And it is possible to discuss how far this end is successfully attained. But in these personal statements, the work of twelve of the most distinguished philosophers, it is not always easy to be sure about the task which each writer has set himself to fulfil. And it is quite clear that hardly any two writers have interpreted this task in exactly the same way.

One great difference to be observed lies in the width of the ground covered in the different essays. Some contributors have interpreted their mission as requiring them to give a survey of their general point of view, while others have confined themselves to a more closely argued discussion of some particular point or problem of a kind to be treated within the limits of a single paper. And there are instances of all possible stages between these two extremes. The first method of treatment appears to be the more appropriate for a work of this kind. But, on the other hand, the task involved is one of singular difficulty and it must be confessed that, in general, those who have chosen the second method of approach have been more successful. The most complete example of the wider treatment is to be found in the first essay in the book, which appears under the honoured name of James Ward. By an extraordinary effort of compression he has managed not only to set out his view of the general nature of reality but also to indicate the main paths by which these conclusions have been reached. Prof. J. A. Smith also presents us with the outlines of something approaching a general system of thought. And Prof. Hoernlé gives an account of the point of view and the ideal of explanation with which he approaches all the problems of philosophy. In his case, however, there is nothing like a system of philosophy. And it is, indeed, noteworthy how strongly the great majority of philosophical writers of the present day disclaim any attempt at the construction of a system.

This tendency is particularly marked among those who are professionally engaged in the teaching of philosophy. In this respect, as in others, there is an interesting contrast to be marked with the non-professional and non-academic contributors to this

volume, Mr. Belfort Bax, Mr. Douglas Fawcett, and Mr. C. E. M. Joad. It would be the height of foolishness to depreciate or neglect the work of any writer because he does not happen to be earning his living by the profession of the subject about which he writes. It is possible, indeed, that the position of the professional may in some ways react unfavourably on his thought, and that there may be something in the criticisms so often levelled at the academic mind. But, on the other hand, there is no reason why the professional, in his anxiety to show himself broad-minded, should allow very much weight to these criticisms. And he is justified in insisting that the amateur, on his side, loses a great deal by not having to teach his subject and by not being in daily touch with others who devote their chief energies to these and kindred studies. At any rate both professional and amateur have their own dangers to face. And this book confirms an impression derived from other sources that one of the special dangers of the amateur is a too hasty demand for a system, which can only be satisfied by a premature and one-sided synthesis. Along with this there seems to go what seems to the professional an undue fondness for labels—Imaginism, Panlogism, and the like—which often fail to do justice to the complexity of the views which are grouped together under one or the other of them.

Another marked difference between different contributors lies in the degree to which they bring personal details into the account of their philosophy. Prof. Hoernlé, for instance, devotes more than half of his contribution to an account of the development of his personal point of view and the different influences which have contributed in forming it. Some of the other writers, such as Prof. Smith, Prof. Taylor, and Prof. Webb, give three or four pages to similar details. Others, like Prof. Dawes Hicks and Prof. Arthur Thomson, give only a short paragraph of biography. And, at the end of the scale we find the austere impersonality of James Ward, Prof. Moore, and Prof. Sorley, whose contributions tell us nothing—at any rate consciously—about the writers as persons at all. From this book one might infer that a dislike of talking about oneself is a special characteristic of the representatives of the University of Cambridge. But such knowledge as I have of that institution leads me to believe that this is a pure coincidence.

Be that as it may, I must confess that to me these purely personal statements seem the part of the book which is emphatically the most worth reading. A summary account of the general position of any particular philosopher really tells us very little, as everyone who has tried to use a history of philosophy knows. It cannot be appraised properly, very often it cannot be understood, without a much wider study of the arguments which lead up to it and of the results which are deduced from it. And when we have made this further study the summary becomes of little value except as a memorandum. The other form which some of the contributions take, that of the discussion of some special problem, is not open to this objection. The contributions of Prof. Taylor and Prof. Dawes

Hicks, which in the main follow this line, are perhaps the two most successful in the book. But either of them might have appeared with but little change in one of the philosophical periodicals, and a volume like this seems a less appropriate place for them.

On the other hand, there are many details about a philosopher's thought which for obvious reasons do not appear in the ordinary kind of philosophical writing. And yet it is very often these details that the historian of philosophy in later ages would be most glad to know. What would we not give for Aristotle's own account of his impression of the Academy, of Plato's teaching, of the philosophical atmosphere in fourth-century Athens, and of his personal reactions to these influences? It is the account of the individual development of the particular point of view, and of all the influences, philosophical and non-philosophical, which have combined to incline the particular philosopher to this or that interest or opinion, that we should value so much and that we so rarely get. A book like this might have afforded a unique opportunity for giving such an account. And it seems a pity that so little advantage has been taken of such an opportunity.

Turn now to the individual contributions. The Preface by the Editor, Prof. Muirhead, deserves more than a passing mention. It deals with two main points. In the first place, the writer is concerned to emphasise the truth that, though philosophical views are in a special sense personal and individual products of those who hold them, yet their claim to objective truth is just as valid as the claim of the sciences or any other branches of knowledge. This is an important point, which deserves to be emphasised, and all that Prof. Muirhead has to say on it seems to me quite admirable. One can only regret that he has not developed it a little more fully. His other main point is more disputable. He maintains that, in spite of wide divergences, there are yet certain tendencies in common to be observed throughout the different contributions, which justify us in believing in a real progress in philosophical thought. How far the contention is justified will be more conveniently discussed later. Here it may be permitted to say that this readiness to look for, and possibly to exaggerate, points of agreement is but one expression of that general attitude of this writer, which makes him, perhaps, of all writers, the most unfailingly generous and sympathetic in his appreciation and criticism of others.

The first of the contributions is "A Theistic Monadism" by James Ward, which deserves special attention as being the last written work of that great thinker. As an appropriate tribute to his memory it has been placed first in the book. It contains a general account of his philosophy, on the lines indicated by the title. It essays to show how an examination of what is given in our experience leads on to a belief in a spiritual pluralism or monadism, and how this in its turn proves to be incomplete and demands the belief in a personal God and a teleological explanation to complete it. The argument outlined is familiar to the

students of Ward's work, and could not be adequately criticised without a detailed discussion of them. Perhaps the points to which criticism would most naturally direct itself would be the analysis of the cognitive process, which might seem to some to take too little account of modern Realist criticism, and the importance attached to the demands of our value judgments in arriving at a final synthesis.

The next two essays follow this distinguished example in attempting to give a summary of a system of philosophy expounded more fully elsewhere. Mr. Belford Bax accepts what he regards as the fundamental Idealist position, that reality is conscious experience, but urges the point that a complete development of the doctrine must take more account of the non-rational, the alogical elements in experience than orthodox Idealism does. His exposition of the system seems curiously unaffected by modern criticism of his fundamental assumptions. Mr. Douglas Fawcett summarises the main points of his doctrine of the creative imagination as the ultimate explanation of reality. This is the theory of Imaginism, expounded more fully in his books *The World as Imagination* and *Divine Imagining*, and for an adequate criticism one would need to examine these works in detail.

With the next article, "From Idealism to Realism" by Prof. Dawes Hicks, we feel ourselves in an entirely different atmosphere. It deals entirely with the problem of knowledge, and sets forth the stages by which the writer passed from an Idealism based upon Kant, through Hegel, to a Realism whose central point is the contention that "real things may be and are directly perceived without owing either their being or their nature to the circumstance of such perception". It is a masterly exposition, with not a word wasted, and this makes it particularly difficult to summarise further. And for me personally it is impossible to criticise, except in details, an exposition with the main lines of which I so fully agree. It is followed by the contribution of Prof. Hoernlé to which reference has already been made. This strikes a more personal note than the previous contributions, and is so far, in my opinion, more appropriate to a book of this nature. It is in the first place an account of the different influences and experiences which have contributed to the formation of the fundamental point of view from which Prof. Hoernlé approaches philosophical problems, and it is followed by a brief indication of the lines on which the problems that interest him most would be dealt with from this point of view. This is what he speaks of as the synoptic point of view, which aims, before all things, at including all relevant experience before making the final synthesis, and at considering other opinions less as errors to be refuted than as contributions to be evaluated and included in the whole. The synoptic point of view, while allowing for what was of value in them, would, however, necessarily rise above them. And so this fundamental standpoint would help to explain, not only the real sympathy and understanding of other points of view which Prof.

Hoernlé shows, but also the slightly Olympian attitude towards them which those who disagree with Prof. Hoernlé sometimes fancy that they detect in him.

After a brightly written essay on the Life Force by Mr. Joad, marred by a gratuitous libel on the Oxford examiners and on Mr. Joad himself in the first paragraph, we come to the striking contribution of Prof. G. E. Moore. Here we are at the opposite pole from the synoptic attitude, and feel ourselves rather in the atmosphere of the definitions and condemnations of an early Church Council. The paper takes the form of an attempt to formulate certain propositions which Prof. Moore holds that he knows certainly to be true and which he thinks that some philosophers have denied. He begins with a number of apparently innocent statements such as the proposition that his own body does exist and has existed for some time, and that other human beings have existed. He goes on to assert his belief that there is no reason to suppose that every physical fact is either logically or causally dependent upon some mental fact. And he follows this with a curt statement that he sees no good reason for believing in the existence of God or in personal immortality. He concludes with a detailed statement of his view that, though the propositions that he puts forward are certainly true and though there is no doubt about their meaning, yet there is the greatest doubt about the correct analysis of them.

I imagine that—to use his own manner of speaking—some philosophers who think that they disagree with Prof. Moore will find the greatest stumbling-block in that sharp disjunction of meaning from analysis, which is made here with not more than a word or two of explanation. Till that point was cleared up they would hardly be able to explain in what sense, if any, they disagreed with Prof. Moore's propositions. But the point probably depends in its turn, on his view of the nature of propositions, and ultimately on his view of the structure of reality. If this suggestion is well founded, it follows that the really crucial point of difference on which we most need discussion, hardly appears in Prof. Moore's statement at all. And it must be confessed that it is a not infrequent experience for some of those who have differed from Prof. Moore to feel, however impressed they may be by the brilliance of his dialectic, that he has never touched, perhaps even has never seen, their real point at all.

The next contribution is by Prof. J. A. Smith under the title of *Philosophy as the Development of the Notion and Reality of Self-Consciousness*. In this, after a very interesting sketch of the stages in the development of his point of view, he outlines the main features of the philosophy in which at last he has found satisfaction. This is an uncompromising Idealism, formed very largely under the influence of Croce and Gentile. It disagrees with some forms of Idealism in holding that Reality is essentially History, *i.e.* process and change, but comes together with them again in the doctrine that this History must be a timeless History. What, however, is

of most importance is the doctrine that this History is of its nature spiritual, and that this spirituality is seen most fully in self-consciousness or Mind. "Mind, as the representative of the spirit of the whole, at once knows and creates whatever in any sense is." This is a doctrine which, at least in the form here given to it, I feel a difficulty in criticising owing to a total inability even to begin to understand how it can appeal to anyone. It is an interesting reflection that this inability is probably in some degree due to Prof. Smith himself, under whose influence I first came when he was passing through the Realist stage of his thought to which he refers in the early part of the paper. I can only trust that he is not unduly disturbed by the thought of his share of responsibility for what I am afraid he must regard as my philosophical damnation.

The next paper on Value and Reality by Prof. Sorley is an admirably constructed summary of the point of view with which the writer's larger works have made us familiar. It is a study of the significance of our judgments of value for our view of the nature of reality, and it leads up to the belief in "a Supreme Mind to whom finite minds and their environment owe their reality". It is indicated, rather than argued, that this dependence on the Supreme Mind must not be taken as depriving the individual minds of their freedom, and this side of the question is considered at length in the contribution which follows this. This is a paper by Prof. A. E. Taylor on The Freedom of Man, which consists in an attack on the treatment of the subject by Green and Bradley and their followers, and in a development of the notion of Freedom and Indeterminacy into a form in which Prof. Taylor thinks that it can be established as a fact. Like everything that Prof. Taylor writes, it is a brilliant piece of work, and shows to the full those qualities which make him such a valuable stimulant and irritant to British Philosophy. The reader will probably feel many questions coming into his mind on points on which Prof. Taylor does not quite satisfy him. Is he fair to Green and Bradley? Are the words of Aristotle wrested from their meaning in order to bring him in as a witness on Prof. Taylor's side? Does the notion of Freedom that he finally reaches really coincide with the Freedom that the "plain man" demands, or thinks that he demands? Such questions can only be suggested here.

The next paper, "A Biologist's Philosophy", by Prof. J. Arthur Thomson, represents a very interesting line of approach. It essays to set forth the kind of philosophic opinions to which the special knowledge and experience of a biologist might lead. Prof. Thomson suggests, among other interesting points, that it would incline one to the belief in the all-pervasiveness of Mind throughout Nature, and that it would at least encourage the belief in a Divine purpose of which the processes of Nature are an expression. It is followed by the last paper in the book, the "Outline of a Philosophy of Religion" by Prof. C. C. J. Webb. This states the case for the acceptance of the demands of the religious consciousness as real evidence about

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the nature of reality. It develops the general view to which the acceptance of these demands would lead us, and ends up with a "confession of ultimate doubts". Perhaps the most attractive thing about a very attractive essay is the unusual degree of frankness and honesty with which all the difficulties and possible objections are faced.

And now, after this survey, we have to face the question how far it is possible to detect a real unity in the different points of view of the contributors. It is certainly true that a large number of the contributions to this volume have much in common in their philosophic attitude. But the question suggests itself how far this is due to the fact that we happen to have these particular contributors brought together in this volume. Even confining ourselves to this particular group, it would be difficult to fit Prof. Moore into any formula which would include the others. Indeed, one of the few generalisations to which one could commit oneself is that the Cambridge of Moore and Broad must be philosophically a very different place from the Cambridge of Ward and Sorley. And the development here seems to be rather away from that emphasis on the claim of the religious and moral consciousness to be a revelation of the nature of reality which characterises so many of the other contributions. Even Prof. Dawes Hicks does not show any particular interest in this line of thought, at any rate so far as his published work goes, though on the other hand there is nothing to show that he positively disapproves of it.

Of course, for various reasons some particular problems are more discussed and arouse more interest in one generation than in another. But it is difficult to find any continuous development in this respect. Again, it is undoubtedly true that certain formulations of particular points of view have been "tried out" at certain times and found wanting and have therefore been finally abandoned. No one, for instance, in these days, would formulate the problems of knowledge in the language of Locke. Or again, Prof. Muirhead is no doubt right in maintaining that old-fashioned Materialism in the form in which it was held some fifty years ago is now definitely a thing of the past. On the other hand, many of the points about which the protagonists in that particular controversy were in reality most deeply concerned—for instance, the status and prospects of the human soul—are still as much a matter of dispute as ever.

Much more, of course, remains to be said on this subject. But, in general, I cannot feel that there are many signs of an increasing approach to agreement on any positive views among philosophers. On the other hand I cannot see that this lack of a substantial body of universally accepted doctrine in any way diminishes the value of philosophical study. Indeed, I should incline to the view that to demand such a result is to mistake the nature of philosophical thinking altogether. Philosophy, I would suggest, only exists and is only needed because of differences of opinion. When, as sometimes happens, a result is arrived at to which everyone agrees it

does not take its place in any ordered science that we call Philosophy, but becomes instead an assumption of our ordinary thinking and ceases to require any further philosophical examination at all. How far any of the contributors to this volume would accept such a view of philosophy it is impossible to say. But it is a reflection which their writings suggest at any rate to one reader.

G. C. FIELD.

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*A Study in Moral Theory.* By JOHN LAIRD. London, 1926: Allen & Unwin. Pp. xxiii, 327.

PROFESSOR LAIRD's volume is one which presents a real difficulty to the conscientious reviewer. It has not the architectonic unity of structure of a systematic treatise; one cannot single out and comment on its 'central' idea, since it can hardly be said to have one. On the other hand, we cannot treat it as one could a collection of single separate essays, commenting fully on those which strike one as outstanding and dismissing others with a mere mention of their titles; the book has too much unity for that sort of treatment. As the author himself says, in the *Preface*, the work falls into four distinct parts. There is a section, which Mr. Laird calls 'analytical' (chapters 2-5), which has for its object to 'justify the imperatives' of morality, in fact, to vindicate the plain man's conviction that there are rules of right conduct which he unconditionally ought to obey. Then follow three chapters (6-8) of a psychological character, dealing with the problems of responsibility, choice and freedom, and a retrospect (chapter 9) of the ground so far covered. This accounts for some two-thirds of the whole book. The remaining third deals more briefly with what may be called sociological matter, the respective claims of 'self' and 'others' (chapter 10), and the ethics of concerted action (chapter 11), and still more briefly (chapter 12) with the question whether ethics requires ultra-ethical postulates of a metaphysical or theological character. Mr. Laird has, as would be expected from him, much that is excellently thought and tersely put to say on all these matters, though I cannot but feel that his resolution to include them all in a single volume has forced him to deal with some of them a little perfunctorily. There are many points even in the first two of his sections which, I think, might have received and should have received fuller treatment if they were to be discussed at the length already decided on. The last third of the book certainly suffers from undue compression, especially the concluding chapter. Mr. Laird is there raising a very large question and has left himself so little room for its treatment that I doubt whether he would not have done better to keep wholly clear of theology and metaphysics unless he meant to go much deeper in his treatment of them. As it is, his treatment of a big subject has an unfortunate touch of 'jauntiness'.

The character the author has given to his book makes it unavoidable for a reviewer to adopt the desultory method of following him through his successive chapters with remarks which must be a little disjointed. But there are one or two observations which I may perhaps make at the outset as of general applicability. In some respects Mr. Laird has very high qualifications as a writer on ethics. He has a refreshingly wholesome belief in the importance of a rule for the conduct of life and the reality of its obligatoriness, as well as a wholly laudable determination to make life as it is lived the object of his study. His work is admirably free from the multiplication of fine-drawn logical distinctions which have no bearing on practice. He has a happy gift of being interested in the actual practice of living and of selecting examples from a very varied range of practical problems which illustrate the real importance of the issues he is discussing. His own style in writing is clear and downright and delightfully free from the learned tomfoolery of needless technicalities, and he has an unusually keen scent for the absurdities which often underlie the pretentious jargon of biologists, psychologists and psycho-analysts who commence as self-commissioned moralists. In a word, he has that sense for reality which is the true 'common sense,' and this is a quality not as common in writers on moral questions as it ought to be. I should say that, to my mind, Mr. Laird has, like all of us, the defects of his qualities. I doubt if he has all the subtle psychological penetration which would be necessary in a first-rate 'director of consciences'. What he sees, he sees clearly, but I am sometimes in doubt how far his vision of character and motive pierces. I mean that he tends to underrate the extraordinary complexity of the moral agent, man. And again, in his laudable anxiety to avoid language with vague implications not capable of being set out for a 'common sense' reader in black and white, I think he tends sometimes to become obscure himself. *Brevis esse labore, obscurus fio* is, I think, a saying Mr. Laird might meditate with some real advantage. It is good, as much as we can, to 'speak with the vulgar,' but if we make the rule absolute, we shall find that there are some things in every science which cannot be so said. Some readers, also, will probably feel that many of the things in which he agrees, as he tells us, with that excellent moralist Dr. Rashdall need not have been said over again in full when they have been so well said by Dr. Rashdall. Personally, I do not share this particular feeling; the things in question are so important that they may well bear being said a second time.

Professor Laird's treatment of the old problem of the relation between 'good' and 'right' in his opening chapter, though not very different from that of Rashdall, seems to me admirable in its simplicity and lucidity. 'Good' is no doubt the more fundamental notion, but 'right' is that with which we are most immediately concerned in a study of conduct. The immediate problem for the moralist is whether an act is what it ought to be, that is, whether

there are reasons which 'justify' the doing of it, as distinguished from reasons which only explain *why* the agent did it. If there are, the act is 'right,' but the justifying reasons have to be found by a reference to 'good'. An act is only justified if, and so far as, it is good (p. 18). Hence ethics starts with the question what is right, but the raising of the question involves two assumptions, that we know, to some extent at least, what is good, and that choice is not an illusion. Obligation, then, is real, and it is 'self-accepted and self-imposed' (p. 23), but it always has a justifying reason, the reason that the obligatory act is the 'best'. This reason is ultimate. Thus morality is really, as Kant taught, a matter of autonomous action in obedience to a categorical imperative, but the supreme categorical imperative has not been rightly formulated by Kant. It is the 'synthetic' and ultimate imperative that, in all situations, a man 'ought to do the best he can achieve'. The consequences follow (1) that all 'oughts' are moral 'oughts'; an artist who does not do the best artistic work he can, given his situation, is disobeying a *moral* imperative, exactly as he would be if he pocketed his host's spoons or carried off his friend's wife: (2) ethics is not the same thing as pure 'axiology,' since it deals not only with 'values' as such but with practice, the causing of valuable things to exist. Mr. Laird pushes this distinction to the point of denying the statement that 'what is good ought to be'. He will only affirm this conditionally. What is good ought to be, *if* considerations of value were relevant to its existence (p. 35). Morals, then, have to do with action and specifically with responsible action; responsible action is provisionally defined as action caused by an agent who is under an obligation to pursue what is good. Obviously such a statement can only be provisional, since it raises at once the formidable question what agents are under such obligation. (Mr. Laird uses the word 'agent' in the widest sense, so that it will cover, *e.g.* a shower of rain, a salt, a toxin.)

Most of this seems to me excellent sense put with great lucidity and precision. I could wish, however, that the author had been alive to the ambiguity of his phrase that the imperatives of morality are 'self-accepted' and 'self-imposed'. Is it intended to make a real distinction here between the 'accepting' and the 'imposing,' and if so, what is the self which both accepts and imposes? If the imposition is not a synonym for the accepting, is it clear that the moral law is self-imposed at all? Historically it does not begin, in the life of any of us, as self-imposed, but as imposed from without, and if you say that this is a mere incident or *accidens*, you have still to meet the difficulty that it is just the men who are through life most loyal to duty in whom the conviction is strongest that the moral law is 'imposed' by a rational will higher than their own. The eminently dutiful man believes in God, as Kant did, even when he was most emphatic in denying that adequate logical justification could be found for the belief. This seems to me a very significant moral fact which neither Kant nor Mr. Laird is justified in ignoring.

What I recognise as a *self-imposed* rule I recognise as a rule from which, for adequate reasons, I can give myself a dispensation. It would be moral pedantry to refuse to break through rules one had simply made for one's self, for good grounds shown; but the moral law cannot be dispensed from, and therefore, I should say, is not self-imposed, though it is, of course, *recognised* as admitting of no dispensation. Kant and Mr. Laird, I think, confuse voluntary assent to an obligation with the self-imposition of the obligation. And again I must at least record my own dissent from Mr. Laird's criticism of the dictum that the good is what 'ought to be,' though space forbids me to do more than urge that the bisection of the world into existents and values seems to me just one of those plausible and dangerous assumptions which a careful thinker ought not to make without very thorough critical analysis. To me non-existing virtue or love appears to have no value at all. Mr. Laird proceeds (ch. 3) to criticise and reject Kant's distinction between categorical and hypothetical imperatives. Some of his criticism seems to me relatively unimportant, but I should say that his main point is both sound and important, *viz.*, that the really significant distinction for moral practice is that between 'dominant' and 'subordinate' imperatives, and that the dominant imperatives need not be purely 'formal'. This leads up at once to the question whether there may not be one, or possibly several, supreme moral imperatives, and this in turn to the further question whether there is a *best* good (or a number of best goods). Mr. Laird is thus led to examine the current distinction between intrinsic and instrumental goods, and rejects it as misleading on the ground that it confuses the case in which an 'instrument' has no value with that in which it acquires a 'value in use.' The really important distinction, he says, and this appears to me quite true, is between things good in certain employments *only* and things good without this restriction (p. 44). The important thing in morals is that the good which justifies a moral rule should, like Kant's own 'good will,' be good in *all* conditions, not that it should be good *unconditionally*. A thing which perhaps would be good 'quite alone' may not be very good when it is *not* quite alone, and it usually is not quite alone. All this seems to me true, and I am heartily in sympathy with the author's protest against the hard and fast severance of 'means' from 'end' involved in the distinction between intrinsic and extrinsic good. (The severance, in fact, has been imported into ethics from the industrial arts, and is not really in place in strictly ethical study. The lie or forgery perpetrated 'for a good end' is not really related to its 'end' as the scaffolding is to a house. You can simply take away the scaffolding when the house is built; the effects of the lie or forgery live on to poison the lives of the parties concerned.) But I think it a mere counter-exaggeration to attempt to deprive the order of time of all moral significance. It may be true, as Mr. Laird says, that the 'critical' hour in a battle sometimes comes at its beginning.

But after all the important thing is the good of *victory* and it is not got, though it may be made 'morally certain,' until the struggle is over.

There are, we are told, a number of different spheres of activity, each with its own special 'dominant' imperative. In the prosecution of science, for example, the dominant imperative is to seek and believe the truth, independently of any considerations of utility or any ennobling effects on my character. This obviously raises a question. Is there really an imperative enjoining the pursuit of knowledge *merely* because it is knowledge? *E.g.* is there any obligation to pry into my neighbour's private affairs, or to rake up old scandals against the dead? If I spend my time researching into the frailties of the Court beauties of the seventeenth century, or the turpitutes of Roman women in the days of Juvenal, I am seeking truth and, it may be, finding and believing it. But is there any moral obligation fulfilled by playing the antiquarian Paul Pry? Is the obligation rather not all the other way—unless it can be pleaded that some present utility is served by the research? Mr. Laird's view (p. 54) is that the imperatives based on *moral* goodness, and they alone, are supreme in *all* spheres. I am not clear how far these positions are consistent, and still less clear what precisely is meant by 'moral goodness'. Mr. Laird's own solution, so far as the particular issue about knowledge goes, is that the supreme moral imperative that I ought to make the *best* of my opportunities prescribes for me how much of my life I ought to spend in the quest of truth. But may it not also decide what *kind* of truth I am to seek? In general Mr. Laird's rule seems admirable, if only we know what the best *in se* is. But the alleged claim, *e.g.* for the special imperatives of truth, seems to me to reduce to little more than the statement that we must not say a thing is true when we believe it to be false, and that there are things which we ought to set ourselves to know. It leaves it an open question whether knowledge of a specific kind ought to be pursued or avoided. The difficulty lies in the fact that Mr. Laird is trying to combine the view that moral excellence itself is one 'sphere' among others with the view that moral imperatives are supreme in all fields. There is clearly here an obscurity which calls for clearing up by further thinking.

The defence of the knowability of good in chapter 5 is an excellent piece of work. I think Mr. Laird for once understates his case against the doubter on pages 89-90. It is quite true that we not only feel horror at the misdeeds of 'false' Sextus, we intellectually condemn him. I should add that Brutus or Manlius may arouse as much 'horror' as Sextus, even in a man who intellectually approves of playing the 'Roman father'. *Infelix, utcumque ferent ea facta minores.* I am relieved, as I suspect most teachers of Moral Philosophy will be, by the frank declaration of page 95 *n.* that Prof. Moore's thesis of the indefinability of good, though true, is not a very important truth. Prof. Moore would perhaps be ready

to admit as much, but he can never have anticipated when he wrote *Principia Ethica* the dreadful fashion among our present-day University students of treating that one piece of doctrine as a substitute for serious ethical thinking. It should be clear that it would be possible for good to be indefinable and yet to be a mere synonym for something else, or again for it to be *analysable*—which seems to be what Prof. Moore meant by 'definable'—and yet to have been incompletely or incorrectly analysed by all past moralists. The abiding value of Prof. Moore's exposure of the fallacies of some of his precursors seems independent of his more general thesis that 'good' defies analysis. In the main it is satisfactory to find the 'plain man's' conviction that he really has a good deal of trustworthy knowledge of good and evil sustaining itself so well under Mr. Laird's critical inquisition.

I am not so sure about the author's success in his chivalrous attempt to defend J. S. Mill's theory of 'qualitative differences between pleasures'. Mr. Laird assumes that red and green may be spoken of as qualities of colour, and that Mill's pleasures 'differ in quality' as red differs from green. But is this what Mill himself meant? It is what he should have meant by the fantastic proposal to determine which are the 'superior brands' of pleasure by the unanimous verdict of a jury of connoisseurs free from all moral scruples. But it is obviously inconsistent with Mill's standing equation of the 'superior quality pleasure' with the 'more dignified pleasure,' a confusion which Mr. Laird ignores. Mr. Laird's own admission that Mill was not entitled to bring 'Socrates dissatisfied' into the argument should satisfy him that the whole speculation has no serious ethical value. I note (p. 112) that he misses the distinction between Mill's method of identifying 'higher' or 'better' pleasures and Plato's. Plato says that we must take the verdict of the 'philosopher' because he alone possesses the 'balance' in which the pleasures have to be weighed, 'intelligence and science'. Hence it is just the moral superiority of the 'philosopher,' the thing Mill is specially anxious to disable, which makes him in Plato's eyes the 'only competent judge'. Plato, to use the language of John Grote, really appeals to the 'philosopher' not for 'testimony,' as Mill appeals to his experts, but for 'authority'. And I think Mr. Laird might also have seen that his concession that some pleasures are *incomparably* superior to others not only 'simplifies the calculus,' as he says, but makes it of no *practical* value, by requiring the construction, for the purposes of calculation, of a 'non-Archimedean number-system'. This destroys the one serious argument Hedonists have ever produced in favour of employing their calculus, *viz.*, that it makes ascertainment of the path of duty such an easy and certain matter for any one who has the gumption to work a sum.

I must be much more brief in remarking on Mr. Laird's interesting psychological chapters (vi.-viii.). I fully agree with him in regarding the identification of intentional action with

ideo-motor action as absurd, but I think the argument he employs partly inaccurate and partly superfluous. The writing of a business letter is 'intentional,' if anything can be, but need not be preceded by an 'idea' of the movement of writing. When I flick away a speck of dust, what matters, what causes the movement is the perception of the speck, not an 'idea' of flicking. The plausibility of the 'ideo-motor' theory depends simply on the elementary confusion between awareness of the intended result and an anticipatory 'image' of the movements necessary to effect it. I note that at pages 124-125 Aristotle comes in for some criticism which seems to rest on misapprehension of his real teaching about motivation. His well-known declaration that *διάνοια αἰτήν οὐθὲν κινεῖ* seems to be misunderstood, as it commonly is. What Aristotle means is that action (actual purposive movement) is initiated by wish (*θελήσις*) and that *wish* is the *specific* form appetition takes in a being who can *think*, as distinguished from a 'brute'. This is why the sentence about *διάνοια* concludes as it does. 'What sets us moving is not mere thinking, but thinking with a view to an end, i.e. *practical* thinking (*ἀλλ' ἡ ἔνεκά τον καὶ πρακτική*)'. The intention is to identify specifically *human* 'appetition' with 'practical thinking'. Burnet, to whom Mr. Laird makes a reference, of course is fully alive to this, but I fear Mr. Laird is not. On the other hand, the criticism of Hume and later 'irrationalists' is excellent, as well as pungent. It is manifestly absurd to argue that 'reason' never influences action from the consideration that demagogues and journalists often get men to act by providing them with *bad* reasons, and the fallacy could not be more tersely exposed than by putting it in this way.

I could wish to have the assertions (p. 131) about 'immoral emotions' reconsidered. Is any emotion as such immoral? Mr. Laird gives as examples envy, malice, cruelty. Would a really careful psychology admit these as emotions at all? Envy and malice *appear* to be complexes into which rivalry (*aemulatio*) enters as a basis, and it would be difficult to say that rivalry as such is 'immoral'. And cruelty seems to me to be still harder to analyse, but I strongly suspect that the emotional element in it would prove to be sometimes curiosity, sometimes fear, sometimes resentment, none of which can be called 'immoral'. Fear may lead a man to be cruel, but so also may pity for the oppressed, which is not, I presume, to be called 'immoral'. Envy, again, seems only to be a misdirected complex with the same emotional foundation as honest indignation at the promotion of a dangerous rascal.

The most important chapter in this section of Mr. Laird's book is that on Freedom. The general position advocated is that of a 'tychism' which holds that no cause necessarily produces an effect; causes merely 'tend' to produce effects, 'incline without necessitating'. The usual arguments for and against 'determinism' and 'tychism' are marshalled and all are dismissed as inconclusive, but, though holding that either alternative is compatible with the facts of

the world, Mr. Laird decides for a 'modified' tychism—the modification consists in the recognition that the course of events is not simply hap-hazard, the 'causes' tend to have specific effects—on the ground that he is impressed by our immediate sense of freedom in choice and responsible action. The discussion is throughout most interesting, and it has the great merit of making it quite clear that we cannot isolate human responsible action as a region of freedom while handing over the rest of what happens to 'determinism'. Yet I feel that here, almost more than anywhere else, Mr. Laird does not quite probe his subject to the bottom, and my feeling is not altered by the fact that I personally hold that he gets off the fence on the right side. I think the issue is unduly restricted. 'Tychism' is not the only alternative to determinism; at least no theist could allow this. According to the theist, divine grace is a real factor in influencing human action, but grace also 'inclines without necessitating'. To avoid determinism, you do not necessarily require to introduce mere 'chance' into things. Or at least, any one who holds that this is the only alternative is bound to give a reason for his view. And again, what exactly is meant by saying that a given cause 'tends' to produce a given effect? If this only means that the cause will produce the effect, unless its action is counteracted, or that the effect is produced 'in most cases,' it is no more than the determinist himself might admit. Does it mean that the cause produces the effect in  $n$  cases but fails in the  $(n + 1)$ th, without any reason at all for the failure? If so, is the doctrine compatible with *any* rationalist metaphysic? And, again, is it simply true that 'we are free when we choose' to act, as Mr. Laird says? Are there not choices—there is a well-known instance in *Candide*—which are not really free? How is it certain that there is any special psychological revelation of freedom? I only mention these questions to suggest that if the old problem of 'free will' is to be raised at all, it cannot be satisfactorily dealt with except by raising a very searching inquiry into the metaphysics of causality which Mr. Laird carefully abstains from raising.

For the contents of the chapters on 'self and others' and 'concerted action,' I have an almost unqualified admiration. I suppose most serious moralists would admit that the antithesis between 'self-regarding' and 'other-regarding' action is a very superficial one, and I am delighted that Mr. Laird makes short work of the nonsensical doctrine that an atheistic Robinson Crusoe ceases to have moral obligations because he is cut off from 'others'. But there is a question suggested by the argument which receives no answer, though I think it ought to be answered. Is a man who has a high moral ideal but follows it with many serious lapses ('a baddish Christian,' Mr. Laird says) a better man than one who has a lower ideal, a tolerable 'Pagan,' but follows it more closely? I should say Yes, provided that the former has, as we say, the 'grace to be ashamed' of his lapses. Of the second man, I think all you could say is that there may be some *presumption* that he *would* have

been a better man than the first if he had 'had more light.' But the presumption is a very uncertain one. His fidelity to his actual standard *may* have been due to the unexactingness of its demands. As against Kant, Mr. Laird rightly insists on the point that 'love can be, and is, commanded'. A word might have been added about the way in which the command is to be obeyed. On the other hand, I do not understand why there should be any objection to the Kantian command never to treat a fellow-man as a mere tool. In spite of Mr. Laird's remarks on page 234, I am not treating postmen and sorters as *mere* tools when I post a letter, as is sufficiently proved by the consideration that we should all refuse to staff the Post Office with public slaves to be used up, regardless of humanity, for our own convenience. All through the chapter I suspect there is some confusion in what is said in discussion of the doctrine that human personality is an 'end in itself' between two quite different views, the view that personality is an illusion and the view that our personality at any moment is a thing 'in the making,' though I readily admit that Dr. Inge, who is the immediate object of Mr. Laird's strictures (p. 287), apparently makes the same confusion in his slightly rhetorical deliverances.

Of the discussion of concerted action I have only to say that I think Mr. Laird has rendered a very real and valuable service to clear thinking by showing how all the problems of 'collective action' and 'collective responsibility' can be satisfactorily treated without any appeal to the misleading notions of the 'mass mind' or the 'national mind'. Mr. Laird's method of starting with the ease of the action of a small committee, which may not be unanimous, and discussing the degree of responsibility for its conduct attaching to the various members, is a model of the way in which all these problems should be treated.

Of the last chapter, the most philosophical in intention of the whole book, I can only speak very briefly. The main object is to defend the claims of ethics to be a strictly autonomous science against biology and psychology on the one side, but specially against theology on the other. Mr. Laird is anxious to show that ethics has no theological postulates and no theological implications. Here, I think, he sets himself to prove more than he really needs to prove. It would be sufficient to guarantee the autonomy of ethics by showing that the science can be built up without any specifically theological postulates, just as we need make no such postulates in astronomy or physiology. I do not see that it is in the least necessary to any autonomy which can be claimed for any branch of science to contend that ethics does not point to theology as its completion. Indeed, since all knowledge is inter-connected, one would expect that ethics, or any other great outstanding department of science, should have some theological implications, unless it is conceded either that we know that there is no God, or that we know that we can know nothing about the matter. In actual execution what Mr. Laird does is little more than to take a number of reasons

which have been given for regarding the immortality of the soul as either a premiss or an implication of ethics and to traverse them. The whole argument has a rather perfunctory character; one feels that the criticism has not an adequate basis in sympathetic understanding. I very much doubt whether a religiously-minded believer in the world to come would recognise in Mr. Laird's statement more than a caricature of the considerations which really weigh with him; a Christian believer, I am sure, would not. He would say that the mere prolongation of existence which seems to be all Mr. Laird understands by 'immortality' is something very different from what he himself means by 'eternal life,' and would probably be willing to concede that if 'eternal life' means only what Mr. Laird takes it to mean, it has not very much to do with ethics, and concerns the S.P.R. rather than the moralist.

A. E. TAYLOR.

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*Science and the Modern World*. By ALFRED NORTH WHITEHEAD. (Lowell Lectures, 1925). Cambridge: at the University Press: 1926. Pp. xii, 296. 12s. 6d.

In the preface to the second edition of *The Principles of Natural Knowledge* (1925) Dr. Whitehead told us that he hoped "in the immediate future to embody the standpoint of these volumes [*The Principles of Natural Knowledge* (1st edition, 1919), *The Concept of Nature* (1920) and *The Principles of Relativity* (1922)] in a more complete metaphysical study". In *Science and the Modern World* the only allusion to Dr. Whitehead's future intentions is that the "question of consciousness must be reserved for treatment on another occasion" (p. 212); so I think we must presume that this book is the "more complete metaphysical study" promised us. *Prima facie* it is not: "a study of some aspects of Western culture during the past three centuries, in so far as it has been influenced by the development of science" (p. ix., first sentence of preface) is not the same thing as a treatise on metaphysics; but there is every reason to believe that Dr. Whitehead has attempted to combine the two. Though he speaks of his theory as only "tentatively" put forward (p. 200) and "sketched in outline" (p. 160), there is no doubt that he conceives himself as "giving the outline of what I consider to be the essentials of an objectivist philosophy adapted to the requirements of science and to the concrete experience of mankind" (p. 124). So I do not think it would be unfair to Dr. Whitehead to treat this book as the exposition of a novel philosophy, particularly as it is being widely read as a reconciliation of science with religion. This, of course, involves neglecting altogether the brilliant setting of science, history, poetry and good common sense<sup>1</sup>.

<sup>1</sup> I cannot speak too highly of the last chapter on "Requisites for Social Progress" in which Dr. Whitehead pleads for art and denounces the twin gospels of Force and Uniformity.

in which Dr. Whitehead has deposited his metaphysic. But there is a serious difficulty in treating it in this manner owing to the way in which the philosophy is expounded.

This book, like *The Concept of Nature* and *The Principle of Relativity*, is in the form of lectures. Chapters I (The Origins of Modern Science), III (The Century of Genius), IV (The Eighteenth Century), V (The Romantic Reaction), VI (The Nineteenth Century), VII and VIII (one lecture on Relativity and The Quantum Theory), IX (Science and Philosophy) and XIII (Requisites for Social Progress) are a set of eight Lowell lectures delivered at Boston in February, 1925. Chapter II (Mathematics as an Element in the History of Thought) was a lecture given at Brown University, Chapter XII (Religion and Science) was an address delivered in the Phillips Brooks House at Harvard and published in the *Atlantic Monthly* (August, 1925), while Chapters X and XI, on "Abstraction" and "God" respectively, appear for the first time. I entirely agree with Dr. Broad (review of *The Principle of Relativity*, MIND, N.S., vol. xxxii, p. 212) in deplored Dr. Whitehead's practice of writing books in lecture form. *Science and the Modern World* is not so shocking an example of this as *The Principle of Relativity*: for "the book represents one train of thought, and the antecedent utilisation of some of its contents is a subsidiary point" (p. xi.). Nevertheless the tone of the book is not consistent: the additional matter added to the Lowell Lectures "to complete the thought of the book on a scale which could not be included within that lecture course" (p. x.) does not fit well into their scheme, and the previously undelivered and extremely difficult chapters on "Abstraction" and "God" do not even pretend to be about science. Moreover, the Lowell Lectures themselves are not homogeneous: for the first half-hour of each Dr. Whitehead discourses in his most charming manner about the history of thought, in the second half-hour he elaborates piecemeal his extraordinarily difficult metaphysic. In consequence of this heterogeneity of form, the philosophy does not appear as clearly as it should: in particular, as Dr. Whitehead admits, "these lectures are not suited for the elaboration of details" (p. 168); and a system of metaphysics stands or falls by its treatment of details. So I think that the right way to consider this book is not as the exposition of a metaphysic, but as creating an atmosphere favourable to the exposition of a metaphysic. This being so, a word for word examination of the sentences in it would be as unprofitable as it would be tedious, and I think that the best course for me to follow in this review is to point out the relations of its doctrines—in particular those concerning events and objects—to those of Dr. Whitehead's previous philosophical works.

Dr. Whitehead's philosophy of nature is well-known to readers of MIND (if not for other reasons because Dr. Broad has provided such admirable "first aid to critics" in his reviews of two of the works in which it is expounded: MIND, N.S., vols. xxix and xxxii); and I need give but the barest outline to make its subsequent development

clear. In *The Principles of Natural Knowledge* and *The Concept of Nature* the fundamental things in the world are events and their properties and relations to one another. Events are directly in space and time: the best example that can be given of one is the specious present of an observer. Objects, on the other hand, are properties of events; and their spatio-temporal relations are only derivative from those of events. A philosophy of nature must include all the things in the world: it must dismiss neither the colour of a rose as a mere secondary quality nor the properties of an electron as a mental concept (many scientific philosophers do both), but it must derive these from the multiplicity of the relations and properties of events. In particular, the points and instants of the timeless space contemplated by common-sense and nineteenth-century physics may be defined in terms of events and their relations. Thus in this system events come first: they are the only particulars and have all the important properties of metaphysical "substance". It is by taking them in this way that Dr. Whitehead has succeeded in including all natural entities in his *Naturphilosophie*; and it is his success in this, I think, rather than in the details of his Method of Extensive Abstraction (for example), that is his great philosophical triumph. But in his next two works—*The Principle of Relativity* and the Presidential Address to the Aristotelian Society on "Uniformity and Contingency" (*Proceedings*, N.S., vol. xxiii, 1922-23)—the emphasis has shifted from events to objects. Perceptual objects<sup>1</sup> (chairs and tables) change from being classes of sense-objects (colours and shapes) to being "controls" of the ingressions of sense-objects into events and as such become necessary to any process of induction. And any possible reference of events beyond themselves requires, firstly, a uniform spatio-temporal structure, and, secondly, objects. But in *Science and the Modern World* Dr. Whitehead goes further towards monism, since he makes every event require everything else for its existence.

"The relatednesses of an event," says Dr. Whitehead (p. 174), "are all internal relations, so far as concerns that event, though not necessarily so far as concerns the other relata. For example, the eternal objects, thus involved, are externally related to events. This internal relatedness is the reason why an event can be found only just where it is and how it is,—that is to say, in just one definite set of relationships. For each relationship enters into the essence of the event; so that, apart from that relationship, the event would not be itself. This is what is meant by the very notion of internal relations. It has been usual, indeed universal, to hold that spatio-temporal relationships are external. This doctrine is what is here denied."

What does this mean? By a relation R being internal Dr.

<sup>1</sup> See on this subject Miss L. S. Stebbing's admirable paper on "Professor Whitehead's 'Perceptual Object'" (*Journal of Philosophy*, vol. xxiii, pp. 197-213).

Whitehead cannot mean merely the proposition that from  $aRb$  there follows that  $a \sim Rb$ .  $\therefore a \neq a$ , i.e., that there follows that either  $aRb$  or  $a \neq a$ ; a true but uninteresting proposition, holding for any true proposition whatever, which McTaggart dignified by the name of "extrinsic determination". For it is an important part of Dr. Whitehead's doctrine that a relationship between an event  $a$  and an object  $b$  is external as regards  $b$  and internal as regards  $a$ ; and if he were only referring to McTaggart's extrinsic determination,  $aRb$  entails  $a \sim Rb$ .  $\therefore b \neq b$  as much as it does  $a \sim Rb$ .  $\therefore a \neq a$ . So Dr. Whitehead must mean something much more like McTaggart's intrinsic determination, by which from the proposition that an event has certain properties it would follow that it has certain other properties. For according to Dr. Whitehead, it follows from an event being itself or having any property, that it has any relational property which it in fact has: i.e.  $aRb$ :  $\therefore a = a$  entails  $aRb$ . And the essence of the event includes all its relational properties, so that any proposition asserting that an event has one of its relational properties is an analytic proposition. This proposition seems to me to be quite certainly false, and Dr. Whitehead produces no reasons in its favour. It seems to me clear that the only relational properties of an event that are internally related to the event are those which logically follow from the definition of an event, i.e. some or all of the event's spatio-temporal properties. Dr. Whitehead distracts attention from his paradox that all an event's relations are internal by his corollary denying that its spatio-temporal relations are external. But, as I understand his system, this is not just because all relations of events are internal, but because an event is defined by its spatio-temporal relationships. If this is so, the corollary is as obviously true as the main proposition is false.

In none of his works has Dr. Whitehead been as explicit as we should like about what he means by an "event": nevertheless I am pretty confident that it arises out of his analysis of simple perceptual judgments like "This is green". Dr. Whitehead's criticism of the notion of simple location (the rejection of which he obviously conceives to be one of the most important parts of his philosophy) is essentially a criticism of the analysis of such a proposition into a substance (e.g. a green sense-datum or a green table) in a certain place at a certain time. For such an analysis Dr. Whitehead would substitute an analysis into a relation between two events and a "sense-object"<sup>1</sup> green (and now, as well, everything else in the world—but these three are the most important). Of these two events one is the location of the green as perceived, the other (which used to be called the "percipient event") is the location of the body of the observer (the "bodily sensorium"). And in the case of a proposition involving a perceptual object (which according

<sup>1</sup> I have never understood why the "sense-object" in Dr. Whitehead's system is not simply a relation between the events concerned. But it certainly is not allowed to be. (See *The Concept of Nature*, p. 149.)

to Dr. Whitehead's penultimate view—*Proceedings of the Aristotelian Society*, N.S., vol. xxiii, p. 17—was an Aristotelian adjective qualifying an event), I understand the difference from the ordinary view to be that, in the analysis of the proposition "The table is in the room now," whereas ordinarily the table would be considered a substantive having the property of being in the room now, Dr. Whitehead would analyse the proposition into a substantive—the event of being that part of the situation of the room now—qualified by an adjectival table. In both these cases it seems to me that the real point of Dr. Whitehead's criticism of simple location is that it is events, not objects, that have simple location: indeed that events are simple locations. In Dr. Whitehead's analysis of a proposition with a space-time reference, it is not the space-time reference that is a property of something else, but other things which are the properties of the space-time reference. Consequently, (assuming, for simplicity's sake, that one spatio-temporal property entails all the other spatio-temporal properties), the proposition that an event has a certain one of these properties is an analytic proposition, and it is not surprising that spatio-temporal relations are internal to the event. Dr. Whitehead states this almost explicitly in one place: "Prehensive unification [= an event (see p. 102)] might be said to have simple location in its volume A. But this would be a mere tautology. For space and time are simply abstractions from the totality of prehensive unifications as mutually patterned in each other. Thus a prehension has simple location at the volume A in the same way as that in which a man's face fits on to the smile which spreads over it" (p. 101).

Since "the word *event* just means one of these spatio-temporal unities" (p. 102), it seems to me fairly certain that nothing whatever except spatio-temporal properties follows from the "essence" of an event. From the existence of the event which is the situation of my room between 8.40 and 8.45 a.m. to-morrow morning, there does not follow the proposition that this event will have the property of extending over another event which is my eating bacon. Consequently Dr. Whitehead's position that "the relationships of an event are internal, so far as concerns the event itself; that is to say, that they are constitutive of what the event is in itself" (p. 146) seems to me quite untenable.

Moreover, it is exceedingly difficult to see how it is possible to start with the event "as the ultimate unit of natural occurrence" as Dr. Whitehead (rightly, I think) says we "must" do, if, as he says in the next sentence, "an event has to do with all that there is, and in particular with all other events" (p. 146). If the existence of an event entails all its relational properties and if all these entail the event ("The event is what it is, by reason of the unification in itself of a multiplicity of relationships," p. 175), I do not see, nor does Dr. Whitehead anywhere explain, how it can be "the unit of things real" (p. 212) nor how it can be other than very misleading to say: "The realities of nature are the prehensions in nature, that is to say, the events in nature" (p. 102).

I think it worth mention that the new dogma of the universal internal relatedness of events plays havoc with two doctrines particularly stressed in Dr. Whitehead's more recent works. In "Uniformity and Contingency" he talks of a perceptual object as "a true Aristotelian adjective of some event which is its situation" (*loc. cit.*, p. 15), and admits that such a thing "marks a breakdown of the reign of relativity," for "this relation of adjective to subject requires no reference to anything else" (*loc. cit.*, p. 17). In this book there is no mention of Aristotelian adjectives (nor, indeed, of perceptual objects): naturally enough, since "each relationship enters into the essence of the event". The other important doctrine that Dr. Whitehead has silently shelved is his epistemological argument for the uniformity of the space-time continuum. "The structure [of the continuum of events] is uniform because of the necessity for knowledge that there be a system of uniform relatedness, in terms of which the contingent relations of natural factors can be expressed. Otherwise we can know nothing until we know everything" (*The Principle of Relativity*, p. 29). Since "awareness of a factor must include awareness of its essential relationships" (*ibid.*, p. 23), awareness of an event now includes awareness of all its relationships, whether or no space-time is uniform. So we cannot argue now from the possibility of knowledge to the refutation of Einstein, and the 1922 Dr. Whitehead's remark that "it has always been a reproach to those philosophers who emphasise the systematic relatedness of reality that they make truth impossible for us by requiring a knowledge of all as a condition for a knowledge of any" (*ibid.*, p. 73) recoils upon the head of the Harvard Professor of 1926.

I will now pass on to Dr. Whitehead's objects. These, it will be remembered, are universals<sup>1</sup>; though Dr. Whitehead prefers to use "eternal object," "in order to disengage myself from presuppositions which cling to the former term owing to its prolonged philosophical history" (p. 221).<sup>2</sup> Whether by using a new word instead of an old one the useful logical distinctions as well as the

<sup>1</sup> "In many respects the statement that an object is a universal does not explain what I mean. Particularity attaches to events and to historical routes among events" (Note to 2nd edition of *The Principles of Natural Knowledge*, p. 201).

<sup>2</sup> I speak with the greatest hesitation on this matter, but I suspect that the disinclination of Dr. Whitehead and of Miss Stebbing after him to use the word "universal" is due to an identification of universals with properties. For those who do not make this identification there seems no objection to translating "object" into "universal". The reply to Miss Stebbing's remark that "this habit of 'translating' Whitehead's terms is an insuperable obstacle to understanding him" (*Proceedings of the Aristotelian Society*, vol. xxv., p. 320 n.) is surely the plea of Philonous which Dr. Whitehead places on the title-page of *The Principles of Natural Knowledge*: "I am not for imposing any sense on your words: you are at liberty to explain them as you please. Only, I beseech you, make me understand something by them".

"presuppositions" are not lost, is another matter. In the past Dr. Whitehead has been at great pains to distinguish from one another the various objects required by his philosophy of nature. Sense-objects, perceptual objects and scientific objects have been discriminated with peculiar subtlety, and in the second edition of the *Principles* (p. 203) Dr. Whitehead states that he now (1925) makes a distinction between perceptual objects and physical objects, though he never tells us specifically what this distinction is. It is the more surprising therefore that most of these distinctions are here neglected. Sense-objects, it is true, remain as terms in a multiple relationship; but all the rest have vanished. Instead we have the new terms "eternal object" and "enduring object," examples of which are a colour such as a definite shade of green (p. 232) and a mountain. "The mountain endures. But when after ages it has been worn away, it has gone. If a replica arises, it is yet a new mountain. A colour is eternal. It haunts time like a spirit. It comes and it goes. But where it comes, it is the same colour. It neither survives nor does it live. It appears when it is wanted. The mountain has to time and space a different relation from that which colour has" (p. 121). From a passage such as this it would look as if Dr. Whitehead were reverting from his theory of perceptual and physical and scientific objects (all of which "endure" instead of being "eternal") as universals to the common sense view of regarding them as particulars. In this case the relation between his enduring objects and his events would be something similar to that between the continuants and occurrents of Mr. W. E. Johnson. And, were it not for Dr. Whitehead's plain speaking in previous works, there would be a good deal here in the discussion of organisms that would support this interpretation. In this book all enduring objects appear as organisms whose endurance is an endurance of pattern. [In his chapter on the Quantum Theory Dr. Whitehead suggests "reiteration" as a better word than "endurance".] A "primary organism" is "the emergence of some particular pattern as grasped in the unity of a real event" (p. 146). But Dr. Whitehead never tells us whether it is the pattern or the total event that has the pattern which is the organism, *i.e.*, whether it is a universal or a particular: and without more light being thrown upon the exact nature of organism I don't feel able to discuss the "theory of organic mechanism". I feel easier in my mind in neglecting what is undoubtedly one of the most important (though not the most novel) parts of the book in that, except for this uncertainty about the meaning of "organism," it is pretty straightforward. Dr. Whitehead is trying to bridge the gulf that separates the physical sciences from the rest of life by substituting organism for matter. But a critical discussion of a "new doctrine of organism which may take the place of the materialism with which, since the seventeenth century, science has saddled philosophy" (p. 53) can only follow an exposition more detailed than that provided here.

Instead I shall be better employed in making a few remarks about

the eternal objects which are discussed in the two chapters in the book ("Abstraction" and "God") which "those readers who find metaphysics, even in two slight chapters, irksome" (p. 220) are advised to omit. Dr. Whitehead seems to me to be alternately the most lucid and the most obscure philosophical writer: these two chapters are in his best obscure style. Sometimes when one has disengaged the meaning it seems such a platitude that one cannot believe that this is all Dr. Whitehead means. "It is the foundation of the metaphysical position which I am maintaining that the understanding of actuality requires a reference to ideality" (p. 221)—does this mean simply that every fact must include at least one universal? "In the essence of each eternal object there stands an indeterminateness which expresses its indifferent patience for any mode of ingressions into any actual occasion" (p. 240)—does this mean merely that adjectives can qualify and relations relate? I suspect that it is Dr. Whitehead's Platonic feeling towards eternal objects that makes him talk of them in such grandiloquent language. For some of what he says about them is, I think, quite simple—simple truisms or simple falsisms.

"An eternal object," says Dr. Whitehead (p. 222), "is to be comprehended by acquaintance with (i) its particular individuality, (ii) its general relationships to other eternal objects as apt for realisation in actual occasions, and (iii) the general principle which expresses its ingressions in particular actual occasions". *I.e.*, we must consider the propositional function  $\phi\hat{x}$ , propositions of the form  $(x) \cdot \phi x \supset \psi x, (x) \cdot \phi x \cdot \psi x$ , etc., and propositions of the form  $\phi a$ . Now about the particular individuality of the eternal object there should be no difficulty, for Dr. Whitehead's first "metaphysical principle" is that "each eternal object is an individual which, in its own peculiar fashion, is what it is" (p. 222). Its "own peculiar fashion" is to be "abstract," by which is meant that "what an eternal object is in itself—that is to say, its essence—is comprehensible without reference to some one particular occasion of experience" (p. 221). *I.e.* its relations to particular events are external to the object. But "an entity cannot stand in external relations unless in its essence there stands an indeterminateness which is its patience for such external relations" (p. 223). This means, I suppose, that an entity cannot stand in external relations unless it can stand in external relations. So far, so good. But "if A be an eternal object, then what A is in itself involves A's status in the universe, and A cannot be divorced from this status. In the essence of A there stands a determinateness as to the relationships of A to other eternal objects. . . . Since the relationships of A to other eternal objects stand determinately in the essence of A, it follows that they are internal relations" (p. 223). Dr. Whitehead draws no distinctions between the different kinds of relations that can hold between his eternal objects: according to him the relation between red and coloured is as internal to coloured as it is to red, although *prima facie* they seem of different logical natures. Similarly the relation

between the property of being a black swan and that of being native to Australia is as internal to the former as is its relation to the property of being a swan. [These are my examples: one of the difficulties in understanding these two chapters is that Dr Whitehead gives none (except of green as an eternal object): so we never know exactly what he is talking about.] In one place only (p. 248) does he mention specifically as one of the forms of limitation of particulars "the special logical relations which all events must conform to". And the only reference to logical relations of objects is in the remarks he makes about the "relational essence" of an object, remarks which I am unable to reconcile with his assertion that the relations of objects one with another are internal. The "relational essence is determinable by reference to that object alone, and does not require reference to any other objects, except those which are specifically involved in its individual essence when that essence is complex" (p. 229). But we have been told that "these relationships [of A to other eternal objects] are constitutive of A; for an entity which stands in internal relations has no being as an entity not in these relations" (p. 223); and, granting this, I do not see how a "mere relational essence" can get us out of the "supposed necessity" of "saying everything at once" when, as Dr. Whitehead truly says, "in so far as there are internal relations, everything must depend upon everything else" (p. 228).

The best I can get out of it is that, whereas the essence of an event includes its relations to every other event and every object, the essence of an object only includes its relations to some eternal objects, and that from this fact arises "the analytical character of the realm of eternal objects". "By this character it is meant that the status of any eternal object A in this realm is capable of analysis into an indefinite number of subordinate relationships of limited scope" (p. 228) and from this Dr. Whitehead is able to analyse his eternal objects into ascending grades of complexity. "An eternal object, such as a definite shade of green, which cannot be analysed into a relationship of components, will be called 'simple'" (p. 232), a relationship of only these simple objects an object of the lowest complex grade, and so on. And Dr. Whitehead sketches a method of getting "abstractive hierarchies" of these objects, though he does not tell us what he wants them for. Though he uses similar terms, there are many differences from the Method of Extensive Abstraction which he has previously employed to obtain from events the points and instants of science. The new method deals not with events, but with objects: and Dr. Whitehead's view of these seems to me so inconsistent that I should prefer to see the "abstractive hierarchies" expressed in the language of *Principia Mathematica* before criticising them.

I now come to the relationship of objects to events, or, as Dr. Whitehead calls it, "the status of all possibility in reference to actuality" (p. 225). For this reference there is required not only

particular propositions expressing the connexion of objects with events ("the limitations peculiar to each actual occasion," p. 225), but also "general limitations at the base of actual things". The chief of these general limitations is the fact that events form a spatio-temporal continuum. "Fundamentally, the spatio-temporal continuum is the general system of relatedness of all possibilities, in so far as that system is limited by its relevance to the general fact of actuality" (p. 226). Other general limitations mentioned by Dr. Whitehead are the four-dimensionality of this continuum and the division of these dimensions into three of space and one of time (p. 225). Unexpectedly uniformity of this continuum is not mentioned as one of these limitations: since the "spatio-temporal scheme is, so to speak, the greatest common measure of the schemes of relationship (as limited by actuality) inherent in all the eternal objects" (p. 231), this G.C.M. would seem to be a matter for discovery by the physicist rather than by the metaphysician.<sup>1</sup> I cannot see that Dr. Whitehead gives any reason for the existence of these general limitations other than that which he gives for the specific limitation to "the particularity which infects the course even within those general relationships of logic and causation" (p. 248):—"Some particular *how* is necessary, and some particularisation in the *what* of matter of fact is necessary. The only alternative to this admission, is to deny the reality of actual occasions" (p. 249). But we can accept the first alternative without giving it the importance that Dr. Whitehead attaches to it: I cannot see how any interesting limitations, either general or specific, can be derived from the truism that a universal is a different thing from a fact. This completion of a universal into a fact—the determination of a propositional function by inserting values for its variables—Dr. Whitehead calls "God". "God is the ultimate limitation, and His existence is the ultimate irrationality. For no reason can be given for just that limitation which it stands in His nature to impose. God is not concrete, but He is the ground for concrete actuality. No reason can be given for the nature of God, because that nature is the ground of rationality" (p. 249). But surely the problems why a fact is a fact and how it can be a fact are just nonsense-questions. Dr. Whitehead is worried by the child's question "Why is a mouse when it spins?" (What is the reason for the ingressions of the eternal objects mouse and spinning into the particular actual occasion which is the fact that the mouse is now spinning?) and is apparently more satisfied by the answer "Because of God" than by the more usual "Because the higher, the fewer". For Dr. Whitehead "the general principle of empiricism depends upon the doctrine that there is a principle of

<sup>1</sup> In the chapter on Relativity Dr. Whitehead still "cannot reconcile" Einstein's Generalised Theory "with the given facts of our experience as to simultaneity, and spatial arrangement". But the "other difficulties of a more abstract character" are not mentioned again (p. 174).

concretion which is not discoverable by abstract reason" (p. 250). If there has to be a general principle of empiricism, I think it is rather Mr. Wittgenstein's opening phrase: "The world is everything that is the case"; and that this is all there is to say about the matter.

Perhaps the "metaphysical need for a principle of determination" (p. 250) is really an emotional need. Otherwise there would seem to be no good reason for the use of the word "value" for "the intrinsic reality of an event" (p. 131) nor for calling "the ground for concrete actuality" by a name with the associations of "God". Dr. Whitehead realises that there are other names for it (Him). "He has been named respectively, Jehovah, Allah, Brahma, Father in Heaven, Order of Heaven, First Cause, Supreme Being, Chance. Each name corresponds to a system of thought derived from the experiences of those who have used it" (p. 250). But though Dr. Whitehead deplores the "unfortunate habit" of "paying to Him metaphysical compliments," he himself does Him the higher honour of a moral compliment. "If He be conceived as the supreme ground for limitation, it stands in His very nature to divide the Good from the Evil, and to establish Reason 'within her dominions supreme'" (p. 251). I cannot see how a "principle of concretion" which is not concerned with the relations among themselves of eternal objects but with the "ultimate irrationality" of facts, can be in any way an ethical principle. The realisation of cruelty in Tiberius is as much a concern of the principle as the realisation of wisdom in Socrates. "The ground for concrete actuality" is surely beyond good and evil just as it is beyond rationality and irrationality: if it must have a name, "chance"—the last in Dr. Whitehead's list—is the best. The use of words with ethical associations like "God," "value," "aesthetic," but defined with ethically-neutral meanings, in a treatise on metaphysics seems to me altogether regrettable. In Dr. Whitehead's language such a proposition as "God is the origin of all value" becomes a tautology without losing its emotional force.

I have dealt with what I consider the most important developments of Dr. Whitehead's thought, and have consequently omitted discussion of many topics, such as most of his philosophy of nature, which are less novel. And as far as possible I have not discussed his theory of knowledge. "On the philosophical side, any consideration of epistemology has been entirely excluded": so states the preface (p. xi.). But Dr. Whitehead has not been able to abide by his self-denying ordinance, and scattered throughout the book are many epistemological passages, all of them interesting and many of them highly disputable. Such a passage is that in which Dr. Whitehead informs us that the *differentia* of the modes of ingressions of a cognitive experience is abruptness, by which is meant that "what is remembered, or anticipated, or imagined, or thought, is exhausted by a finite complex concept" (p. 239). This connects ill with the places where Dr. Whitehead speaks as though cognition

were a little something extra added on to "uncognitive apprehension," which under the name of "prehension" (p. 97) is used for relations between non-mental entities. Free will is discussed round Tennyson's line:

"The stars," she whispers, "blindly run," (p. 109)

a metaphor as unfortunate as every other used in this unfortunate controversy. But Dr. Whitehead "reserves the question of consciousness for treatment on another occasion" (p. 212): so I have not discussed his psychological and epistemological *obiter dicta*.

*Science and the Modern World*, regarded as the exposition of a metaphysic, is a disappointment. I was the more disappointed in that I am a sincere admirer of Dr. Whitehead's philosophy of nature, and am convinced that the truth about the natural world lies somewhere along its lines. For the philosophy expounded in this book Dr. Whitehead gives hardly any reasons, nor for the connexion of his *Metaphysik* with his *Naturphilosophie*, so that the reader is continually asking plaintively "Why?" "Why?" "Why?". The "philosophy of organic mechanism" appears here as an intuition of Dr. Whitehead's, which may, of course, be as correct as is his reasoning about the Method of Extensive Abstraction. But the reasoning is lacking: we are given the answer to the sum, we want the working out. Will not Dr. Whitehead give us this in a still "more complete metaphysical study"?

R. B. BRAITHWAITE.

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*Mind and its Place in Nature.* By DURANT DRAKE. New York: The Macmillan Company, 1925. Pp. xx + 259.

PROF. Drake is already well known as the originator and editor of *Essays in Critical Realism*. In this book he has undertaken the task of working out the metaphysic that seems to him implied by the epistemological theory of "Critical Realism" previously elaborated by himself and his colleagues. Accordingly he now presents a "theory of the ultimate nature of mind and matter" together with a restatement of Critical Realism, for he believes that "the metaphysical conclusions reached greatly strengthen" the original theory and are themselves dependent upon that theory. This interconnexion of the two theories is interesting since, in the *Preface* to the earlier volume, Prof. Drake had pointed out that the Critical Realists sought agreement only with regard to the epistemological problem, whilst holding in fact "somewhat different ontological views" (*loc. cit.*, p. vii). He now maintains that "the theory is organic; the pieces fit together" (p. xiv). The exposition, therefore, suffers from what is, perhaps, an unavoidable complication; there are such frequent cross-references and postponed explanations that Part I must be re-read after Part

II has been grasped in order that the theory as a whole may be comprehended. The division of the book into "Part I: Mind"; "Part II: Nature," followed by a "Conclusion: Mind and Nature" does not precisely indicate the distribution of the subject-matter. The *Preface* deserves careful attention; it is remarkable for its expression of immense enthusiasm—an enthusiasm and confidence that pervade the whole book; here at last, it is suggested, is a theory that not only clears up all the difficulties of the "epistemological tangle"—no small merit in itself—but which also explains "more simply and comprehensively than any other theory the observed peculiarities of experience" (p. xi). Such a theory may well claim to be "new to the world of thought, new, that is, in its wholeness," and to be deserving of careful examination. Scattered throughout the book we find the following detailed claims made by Prof. Drake: (i) it is the simplest theory that can account for all the known facts of experience (p. ix); (ii) it is more in accord with Common Sense than any other theory except Naïve Realism, which is admitted by all philosophers to be untenable; (iii) it alone is consistent with the Conservation of Energy and yet admits the causal efficacy of mental states (p. 89); (iv) it alone definitely assigns a place for Mind in Nature and allows at the same time of an evolutionary account of Mind (p. 87); consequently (v) it involves no break in the continuity of the evolutionary process: it needs no appeal to emergent properties (p. 242). These advantages are all to be secured by combining Realism with Ontological Monism by means of the conception of the "datum of consciousness" as an *essence*. These terms are obscure; the meaning attached to *datum* and *essence* by the writers of the original *Essays* was difficult to determine. Prof. Drake has certainly tried to make the position clearer and he has, in fact, thrown some light upon the situation. There are two main questions to be asked: (1) In what sense is the theory "realistic"? (2) What exactly is the "datum"? These questions are not easy to answer. Prof. Drake gives a verbally clear statement of what he understands by "realism", and he certainly holds that the arguments for realism are overwhelming. "Its fundamental tenet," he says, "is that things exist in their own right, prior to and independently of our knowledge of them. Experience reveals, but does not create them" (p. 4). We shall find, however, that the crux of the statement—*viz.* what are the "things" which "exist in their own right" is far from clear. Before attempting directly to answer these questions it will be best to summarise as briefly as possible Prof. Drake's theory of the "ultimate nature of Mind and Matter". The brevity of the summary may lead to misconception, but I shall attempt to indicate the most essential points, giving sufficient references to enable the reader to correct the details for himself.

This, then, as I understand it, is what Prof. Drake holds. The arguments for the existence of the physical world independently of mind are overwhelmingly strong. This physical world, or Nature,

is a single, coherent spatio-temporal system within which physical things are in causal interconnexion (p. 159; *cf.* p. 16); physical things *are* what the physicists tell us that they are: electrons in rapid motion (p. 94); none of the so-called "secondary qualities"<sup>1</sup> belong to physical things, but they have size, shape, position, etc. (p. 53); science tells us nothing whatever as to the ultimate substance, or stuff, of which these "units of matter" are composed (p. 92); we are, therefore, free to assume that this substance is psychic (p. 81). Moreover, there are minds which are conscious of the physical world, and an examination of the nature of consciousness shows that minds are not disparate from physical things. On the contrary, the mind is the brain, or cerebral mechanism (p. 93 and p. 242); the brain is a collection of electrons; mental states are cerebral events, *i.e.* a mental state *is* a cerebral event looked at from within. Mind is thus an integral part of Nature, and Nature is psychic in substance and falls wholly within one spatio-temporal-causal order.

It will be admitted that the above view of the nature of Reality is rightly described as a monism. It will have to meet the difficulty that always confronts a monistic theory: How to account for the observed complexity and diversity of the world? Prof. Drake has, indeed, noted an obvious objection to his identification of mental states with cerebral states, *viz.* that the former are relatively simple whilst the latter are immensely complex. His reply is that what is simple is not the mental state but the *datum* of which the mental state is aware. The organism has the power of reacting to a complex existent as though it were a simple unit. Prof. Drake gives examples of this psychological process of "fusion" and concludes, "In all these cases . . . the psycho-cerebral complex is obviously very intricate, but the reaction is relatively simple; and we are aware of as a unit what we react to as a unit" (p. 110). This psychic fusion is the characteristic of all mental life; the cerebral events remain multitudinous, so that the fusion, or summation, or contraction, is "merely cognitive, not existential". Prof. Drake insists that "the events known, whether in perception or introspection, are not *done anything* to by the synoptic process. . . . The fusion, or summation, is merely a name for the fact that the datum is relatively simple" (pp. 110-111). This conception will be familiar to readers of Prof. Strong's books and recent articles in *MIND*, to which Prof. Drake makes constant reference.

It will be found that *fusion* has two parts to play in Prof. Drake's theory. On the one hand it is used to justify the identification of mental with cerebral states; on the other hand it is used to explain the condensation of ether vibrations into, say, the colour *red*. It is by this means, then, that Prof. Drake

<sup>1</sup> Prof. Drake points out that the terms "primary qualities" and "secondary qualities" are inappropriate; but he uses them with their ordinary denotation.

attempts to account for the perceived heterogeneity of the actual world. Qualities are thus "mass-effects"; fusion, the result of motor-reaction, converts a multitude of events into a simple quality; but the conversion is cognitive (pp. 119-124). It is asserted that "Qualities are thus simplifications for awareness, in which the separate items are lost, because too minute, individually, to produce separate reactions". We can sometimes by discriminative attention separate out the complexity in a fused datum, but in the case of what are called simple qualities we are unable to effect the analysis, not because they are really simple, but because "we have no discriminatory machinery for isolating and attending to them" (p. 117).

The next step is to explain the projection of these qualities in space. This again depends upon motor adjustment. The organism reacts to a physical object external to it; in so doing the mental states which are due to this reaction are *referred* to the object of the reaction and the qualities thus obtained are *imputed* to the physical object. Thus "projection is merely the *referring* of character-complexes to a certain position in space; it is a process of imputation based upon motor tendencies" (p. 142). A similar account is given of projection in time (ch. xii.). The awareness of these qualities constitutes consciousness, which is thus a "large-scale process". Prof. Drake follows Prof. Strong in his conception of consciousness, and since that conception is well known to readers of MIND, it is not necessary to state it in detail here. It must, however, be noted that Prof. Drake has not succeeded in making this conception any more plausible. To describe consciousness as "the act of meaning" (p. 175) is not enlightening, especially when a little later we are told that "consciousness is the virtual presence of the absent, made possible by attention to what is meant, rather than to that which means" (p. 176); and, again, "consciousness is a perpetual assumption" (p. 179). Does Prof. Drake mean that if I am "conscious of a chair" all that can be said is that I am "meaning" a chair?

So far little has been said about the "datum of consciousness"—the central conception of the theory. The Critical Realists are all agreed that cognition requires three "categories": (1) the knower, or self; (2) the object known; (3) the datum of experience, the object-as-known. The first two are existents; the third is not an existent because it does not form part of the spatio-temporal-causal order. Prof. Drake uses various alternative phrases to express what is meant by "the datum". It is "the object 'given' to me at the moment"; it is "what is 'before my mind'"; it is "the 'content' of my experience," and so on. It must, therefore, be distinguished from the term "sensum" as used by those philosophers whom Prof. Drake calls the "Cambridge Realists," but doubtless it is meant to have much the same denotation. But when we ask what exactly is the nature of the "datum," the question is much more difficult to answer. Prof. Drake quite often speaks of the

datum as an "essence," using the term first adopted by Prof. Strong from Prof. Santayana, and it is by that term that the theory is usually described. Prof. Santayana has taken considerable trouble to explain that "the essence" is a "universal"; that it is a "logical" entity, and is not in time or space. But now Prof. Drake states very clearly, in a footnote, that the datum may be a particular, and is a particular whenever I am aware of a particular—*e.g.* "This red spot". He adds: "the term 'essence' should not be contrasted with the particular, or the concrete, or indeed with anything. The class of essences is the inclusive class, covering everything that can be mentioned. An essence is a 'describable somewhat'" (p. 8 n.). It is necessary to dwell upon this statement at some length, for it seems to me that the admission made in this note renders the conception extremely confused, and I believe that it is only because he regards the datum as sometimes a particular, sometimes a universal, that Prof. Drake has been able to give plausibility to his theory. Prof. Drake has made the admission in order to account for a problem suggested to him by Dr. Broad, *viz.* how he can explain the fact that we sometimes perceive the particular red spots simultaneously. This is a difficulty that confronts the Critical Realists at every turn. If all that we are "given" is an *essence* or universal, to be sharply distinguished from a particular existent, which is affirmed, but not given; then, how can we account for the fact that we do see a table in a given spatial position? Prof. Drake's reply is to give up the contention that the essence is always a *universal*. At the end of the footnote from which the above quotation was taken he says: "We are, indeed, aware of particulars, and of actually existing particulars. At least, as realists we believe and affirm that we are. But by being existents these objects of our experience do not cease to be data, essences, counters for discourse, logical entities. *That they are anyway.*" Elsewhere, speaking of the importance of keeping clear the distinction between the two categories, datum and states of the knower, he says: "The fact is that although the relevant *existents* are mental states in my head and physical events in outer space, my datum of consciousness is not exactly either of these, but a sort of logical hybrid of the two" (p. 62). One wonders how the "logical hybrid" of two existents in Nature can be a non-existent essence having no situation in Nature! Prof. Drake's explanation of the difficulty seems to have explained away the peculiar nature of the datum upon which the utility of the theory mainly depends. Our perplexity is increased when we remember his assertion that "*in so far as perception and conception are correct*, the data of our experience are the very physical things that surround us in space" (p. vii). But how can the "physical things" which, we have been told, are collections of electrons that are never perceptible, be the "data of our experience," since the *datum* is never an existent and is not in Nature? Prof. Drake is contemptuous of a theory such as Dr. Broad's, which allows all "sensa" to exist, and of such a theory as Dr. White-

head's, which insists that secondary qualities must be as much a part of Nature as are electrons. He finds two outstanding objections to both these theories: first, that the physicist finds that physical things have relatively simple and coherent properties; second, that the innumerable *sensa* admitted to exist have no causal efficacy, and must therefore be excluded from the system of Nature. He thinks that both these theories reduce "the physical apple" to a "mere blur" (see p. 17 and *cf.* p. 53). His own theory professes to avoid the difficulty by regarding "the physical apple" as an existent of the physical kind to which qualities are *imputed*. This, so Prof. Drake insists, is the "crucial point" of his theory. *What* we perceive are characters that we impute. Perception is a "sort of supposition" and *data* are "supposititious existents" imagined, imputed, dreamed (see p. 23, p. 33, and p. 62). These imputed characters are the secondary qualities; the primary qualities do in fact belong to physical things. Thus the distinction between the primary and secondary qualities is of the utmost importance for Prof. Drake. He makes no attempt to consider the serious arguments brought against the validity of such an ultimate distinction—arguments that have surely been re-enforced by the modern assimilation of space and time—he merely asserts that in his view "the older realists were on the right track here" (p. 52). It follows, then, that "the colour-qualities are *falsely* imputed, the geometric forms of our perceptual data are *rightly* imputed to the things about us" (p. 72).

At this point we must ask: Since colour is *always* "falsely imputed" to physical things, what constitutes the difference between veridical and non-veridical perception of a red patch? It is in his anxiety to allow room for erroneous perception that Prof. Drake has been led to deny the existence of data. But now we find him saying that our experience is veridical, so far as physical objects are concerned, only in so far as the primary qualities are concerned (p. 53 and *cf.* p. 8<sup>1</sup>). Yet, elsewhere he has told us—though only in a footnote—that sometimes (*viz.* when perception is veridical) "cognition lights, *as it were*, upon the very thing or property *that exists*" (p. 10 n., *italics mine*). The "*as it were*" betrays the confusion into which the attempt to keep *data* non-existent and, at the same time, to maintain the veridicity of normal perception has led the author of this ingenious theory. The confusion is increased by another footnote (to p. 55). The whole chapter in which this note occurs must be read in order that justice should be done to it. I have space only to suggest some of the difficulties that it raises. Prof. Drake now distinguishes between (a) the "geometrical property," *roundness*, and (b) the "sensuous quality" of which we should be aware when looking at a round coin. Only (a) is "a literal characteristic of the piece of copper or silver in that portion of space" (p. 55). Yet, this "geometrical property" is a *datum*; it is an apparent physical property that, in the case supposed, does really characterise an existent in Nature..

This "geometrical property" is thus a *shape*, but how can a *shape* be non-sensuous? Is not Prof. Drake confusing geometrical order with sensuous shape, and then simply dropping out the sensuousness of 'shape'?

The upshot of the matter appears, then, to be this. What happens when I do in fact see an apple (*i.e.* when I am not suffering from hallucination) is that there is "an object before my mind"—the essence of the apple—and this apple is affirmed, or believed, to exist. But what is affirmed to exist is never what I *see*; it is that to which *what I see* is imputed. The 'apple' as a physical thing is a collection of electrons, and as an ultimate substance is, according to Prof. Drake, psychic in Nature. The peculiarity of the theory on its epistemological side seems, then, to consist in the conjoint assertion of the following statements: I am aware of an "essence" (say, an apple); I impute this essence to an actually existing particular; I am aware of this particular; but a particular is not an essence, whilst "the datum" is that of which I am aware.

We are now able to answer the first question asked at the beginning, *viz.* 'In what sense is the theory "realistic"?' It is realistic in that it asserts that there are particular existents independent of mind: these "things which exist in their own right" are the atoms and electrons dealt with in physics. The theory is, presumably, a "Critical" Realism since it asserts that we do not see what we *seem* to see, *viz.* an existent having certain qualities; what we do in fact *see* are qualities which are projections of our mental states and an object in space upon which these qualities are projected (see p. 178, *et passim*).

The answer to the second question, the nature of the datum, is less clear. Prof. Drake has made it evident that it sometimes "exists," yet it is always an "essence" and is a "logical hybrid". A distinction has been made between two classes of *data*, *viz.* (i) those which correspond to "primary qualities," and (ii) those which correspond to "secondary qualities". Those in class (i) are literal characteristics of entities in space and time; those in class (ii) are not. Prof. Drake has failed to explain *how* it is possible that I should see an apple *there*. *What I see* has no attachment, on his theory, to space and time. In this respect it seems essential to recognise some relation between the "essence" and the spatio-temporal entity that would be analogous to what Dr. Whitehead calls "situation". But such a recognition would involve a more careful consideration of the nature of the distinction between "universal" and "particular" than any of the Critical Realists seem ready to undertake. The distinction between "essence" and "existence" seems to me to be drawn in the wrong place. Is not an *electron* as much an *essence* as an *apple*?

In a "Note" at the beginning of the book Prof. Drake calls attention to Mr. Broad's book *The Mind and its Place in Nature*. It is scarcely possible that two books so similar in name and dealing with the same subject should present a greater contrast. Dr.

Broad's book is cautious, full of patient analysis of various theories of perception which seem to have some "initial plausibility"; and finally discussing at great length the arguments for and against his own "Sensum Theory" which seems to him to have somewhat greater plausibility than the rest. Prof. Drake's book is hopeful, confident, and concerned only with the statement of his own theory, so sure is he that it *must* be accepted by anyone capable of making a wrench in his mental habits comparable to the wrench required by Copernicus! Dr. Broad, again, considers all the various theories as to the relation between mind and body that seem to him logically possible. Prof. Drake discusses the one theory that seems to him to grow directly from his account of sense-perception. Lastly, Dr. Broad came to the conclusion that there were "just seventeen" such theories; Prof. Drake within a few months of this announcement has propounded an eighteenth and suggests, in a discreet footnote, that when Dr. Broad accepted "emergent laws" he had "not considered the theory unfolded in this volume" (p. 242 n.). A possible reply to that may be that the difficulty of maintaining that all reality is psychic is greater than the difficulty of admitting emergence.

L. SUSAN STEBBING.

## VI.—NEW BOOKS.

*Our Minds and their Bodies.* JOHN LAIRD. London: Oxford University Press, 1925 (The World's Manuals). Pp. 122.  
*Mind and Matter.* C. E. M. JOAD. London: Nisbet & Co. Ltd. Pp. 170.

Prof. Laird's book consists of four parts: the "Attitude of Common Sense," the "Evidence of the Sciences," "Hypotheses concerning the connexion between Mind and Body," and "Metaphysical Speculations." Of these the first is of special importance because it gives the key to Prof. Laird's treatment of his subject. Common-sense is to give the verdict where scientific or philosophic doctrine appears doubtful. And common-sense according to him is consistently dualistic in its assumptions about mind and body. It tells us that 'our bodies are very different indeed from our minds'; and it does more, for it assumes a thorough-going interaction between the two. Does common-sense really support this doctrine as completely as Prof. Laird and others believe? Voluntary movement and sense-perception are the types of experience to which he appeals for evidence of his contention. In voluntary movement, we are told, we experience, and know that we experience, the action of mind on body. A man 'wants to raise his arm, to whistle for his dog, or to vault a fence; and in the usual cases these actions ensue. . . . We believe these psychical intentions to be explicable, without remainder, in terms of what we call our minds' (p. 16). This is explicit, but is it true? Do we ever seem to be aware of ourselves as *mere* mind setting in motion *mere* body? This is surely not the belief of common sense but a philosophical refinement on it. The process at every stage is experienced as a function not of body only, nor yet of mind only, but of an embodied self. From the beginning the intention to move is experienced as involving inchoate motor tendencies; and this is true even when, for physical reasons, the complete movement cannot be carried out. The action of body on mind of which common sense is supposed to be aware in sense-perception is at least as doubtful. Prof. Laird tells us that 'plainly the body enters here' and that there is 'affection of the sense organs with subsequent effects upon the body' (p. 20); but though this may be common sense it is not adequate to his purpose. He ought to maintain that we are aware first of a purely bodily change and then of a purely mental effect, which would be adequate but is not common-sense. For common-sense the process of seeing, which Prof. Laird treats as a mere mental effect, is an experience in which an embodied self, including in a special way the seeing eye, is contrasted with the thing seen as external object, as something other than itself. There is certainly a dualism, but it is not, for common-sense at any rate, a dualism between the mind and its body, but between the embodied mind and the object it perceives. Generally speaking, for common-sense the word 'I' does not mean a pure mind contrasted with and acting on a body, or acted on by it, but a union of the two about the precise nature of which common-sense does not trouble itself.

In his second part Prof. Laird gives an exceedingly succinct, lively and

comprehensive account of recent developments in the physiology of the nervous system and in psychology, and discusses their bearing on his central problem. This is a chapter which should prove welcome not only to the general reader but to the philosopher in search of a bird's-eye view of the relevant facts. The third part is concerned with hypotheses which suggest themselves when the problem is approached from the point of view of science, as contrasted with properly philosophical theories designed 'to bring any proffered speculation into alignment with our general knowledge of the universe'. There are 'three essential types of hypothesis and three only. Either the mind depends on the body or the body on the mind, or the two are independent, although conjoint' (p. 59). Only the last of these is seriously discussed by Prof. Laird, for the important issue for him is between what he takes to be its two rival forms, parallelism and interaction. Relying always on the supposed testimony of common-sense he is of course a champion of interaction, but his criticism of parallelism seems unfair in its initial assumption that the parallelist must assert absolutely the mutual independence of mental and bodily process. Though parallelism asserts that neither produces the other or acts on it or in any way interferes with it, it is not committed to the absurdity of affirming that there is no ground in the nature of things why they should be connected; indeed, the parallelist to account for the facts as he sees them must assert an even more intimate connexion than the interactionist. It is true that the search for such a ground belongs to metaphysical rather than scientific speculation, but it is a scientific difficulty which demands the appeal to metaphysics. It is unfortunate that Prof. Laird should have allowed his absorption in this issue to prevent him from dealing faithfully with materialism, which after all still holds the field as a purely scientific hypothesis. Materialism asserts that mental life depends not only for its passing modifications, but for its very existence, on pre-existing matter, and by asserting interaction Prof. Laird has not necessarily denied materialism, for the two are not genuine alternatives. The problem whether mind and body interact or not arises only when the two are what Prof. Laird calls 'going concerns'. Interaction presupposes the existence of mind, while materialism seeks to account for it.

The last part of the book consists of a brief and brilliantly written exposition and discussion of almost every type of metaphysical speculation, which should whet the appetite of the general reader who has philosophical interests. One might find fault with it on the ground that it is hardly fair to launch such keen criticism against a necessarily sketchy exposition, with the danger that the reader may be left wondering how thinkers reputed great and wise could seriously hold the views he ascribes to them. But Prof. Laird has supplied a bibliography to which the bewildered may turn for assistance.

Prof. Laird has contrived to get an amazing amount of himself into his pages, and it is this which makes them unusually stimulating for a book of this kind, though at the same time rather strong meat for more than a narrowly limited section of general readers. Mr. Joad, on the other hand, is frankly a guide to the beginner, and will appeal to a different and wider public. He is not so much concerned to confine himself to the special question of the relation of the mind to its body; and his embarkations on the sea of metaphysics, unlike Prof. Laird's, have the appearance of being made as much for their own sake as because they are necessary for the understanding of the narrower problem. His aim is to cover a very wide area and deal with fundamental problems as simply as possible without being seriously misleading. On the whole he has not been much more misleading than was inevitable. The book is labelled on the cover "An Introduction to the Study of Metaphysics" and on the title page "The

*Philosophical Introduction to Science*". The former is the more accurate description. In his first two chapters he deals with the Materialist or Mechanist conception of the universe, sketching its growth and adducing reasons for dismissing it derived from recent developments in biology, psychology, and physics. Having thus shown that mind owes neither its existence nor its momentary variations to matter, he proceeds to dismiss Idealism or what he calls "the attempt to eliminate matter in the interests of mind," returning against it in its partial form as subjective idealism a verdict of 'not proven,' and rejecting it in its wholehearted form as "Spiritual Monism" on the ground that it cannot satisfactorily account for the apparent existence of differences and of error. "If differences are unreal, then the mistake which we make when we think them real is a real mistake," and we shall still have to explain away error (pp. 103-104). After a chapter on recent psychological thought, with special reference to the theories of Dr. Rivers and Mr. Bertrand Russell, which he finds as menacing to the doctrine of human freedom as Materialism itself, he concludes with a chapter briefly indicating the lines on which he would himself escape from the *impasse*.

Mr. Joad's striving after simplicity in exposition and criticism does not escape the inevitable danger of making it all seem easier than it really is, even though he is careful to emphasise the difficulty of the problems and the provisional nature of their solutions. Sometimes he simplifies so much as to be misleading, as for instance when he represents Hegel as asserting that all differences are unreal (thus making refutation easy by mis-statement) or represents Epiphenomenalism (he does not use this name) as merely a later development of Parallelism, which has long been superseded by it (pp. 23-24), or classes Berkeley as a subjective idealist (p. 68). And surely nothing but confusion can arise from speaking of 'an erroneous mental construction from a *true perception*' (p. 79); nor is it fair to describe Hume as 'light-hearted in his cheerful acquiescence in the results of his logic' (p. 81). Mr. Joad's own doctrine turns on the notion of a 'Life Force,' coming from some unknown source into a dead world of 'neutral particulars'. It is 'purely instinctive' (p. 149), but he personifies it throughout. It 'struggles to achieve an ever higher degree of consciousness' (p. 149), and is full of 'purposes' and 'devices'—indeed we are 'mere instruments of life created by life for its own purposes' (p. 153). The life force is powerless by itself and must from the start work in and through matter, which, however, from the start proves stubborn and recalcitrant. Our freedom depends apparently upon the extent to which the life force is thwarted in us by the barrier which our body presents to its aims (*cf.* p. 151), but this purely negative account remains obscure, because Mr. Joad does not make it clear what it is in us which is thus left partially free from its control. Is it the 'individualised expression of the life force in ourselves' (p. 151)? But if so, what is the source of that individualisation? Apparently it depends on the peculiar nature of our bodies, and our freedom would thus be due to and vary with nothing but the structure of our bodies—a view which presents as great objections as the type of determinism from which Mr. Joad is trying to escape. The structure of our bodies must itself depend on other conditions, which thus in the long run determine the 'freedom' which depends on it. Mr. Joad's view is further complicated by the doctrine of 'neutral stuff,' by which he hopes to escape from an ultimate dualism. Mind is simply a particular arrangement of the same stuff which in another arrangement is matter. But the attempt at escape is not whole-hearted, for the life force 'starts outside the lifeless world of particulars and creates mind by "coming into contact with them"' (p. 162), and Mr. Joad does not suggest that it is itself an arrangement of neutral stuff.

A. K. STOUT.

*Free-thought in the Social Sciences.* By J. A. HOBSON. London: George Allen & Unwin, Ltd., 1926. 10s. net.

The term 'free-thought' is often used to mean liberty of speculation without regard to any restrictions imposed, or supposed to be imposed, by religious influences. Mr. Hobson means something wider than this. His object is to point out how various and how subtle are the influences, social, economic, political, as well as religious, which beset the thinker as soon as he is concerned with any but the most exact forms of science. Some of these are obvious: they are therefore comparatively easy to avoid, and the honest thinker succeeds in avoiding them. But many of them act upon the mind of even the most honest and best-intentioned thinker without his knowledge; and, just because he is not aware of them and believes himself to be free from any such disturbing influences, he is in the greater danger of failing to allow for their effect and of producing, as the results of scientific thought, what are really the prejudices of his position and his interests.

If this is a true diagnosis, the danger is clearly a serious one and gratitude is owed to anyone who will point it out with sufficient fulness of illustration to enable thinkers to test it from their own experience. It is clear that the service can only be effectively performed if he who undertakes to warn us is sufficiently detached from party to free himself from the charge of obvious partiality: a Conservative would not be likely to accept warning from one whose ideas of these distortions were borrowed entirely from Conservative sources, and so with supporters of any other division or class. Mr. Hobson has certainly done his best to be impartial. It would be possible without knowledge of his other works, to form an opinion from this volume alone where he stands as regards his general political outlook. But his illustrations of these distorting influences are taken from the side with which he might be expected antecedently to feel more sympathy as well as from its opponents. He is also to be congratulated on writing with sufficient simplicity to enable his work to be read easily by those who have no equipment of technical knowledge: even the chapter on "Marginalism," which Mr. Hobson suggests may be omitted by those who have no special training in economic theory, though it will no doubt appeal more to those who have such training, can be read with advantage by those who are without it.

It is not improbable that many of Mr. Hobson's readers will think at first that their own opinions, whatever those opinions may be, are formed on reasonable grounds and are free from the particular bias which Mr. Hobson professes to find in them. If, as is not impossible, further careful and candid reflection convinces them that, though they have honestly tried their best to be scientific and impartial, they cannot entirely acquit themselves of the charge, they will be the more anxious to see what comfort Mr. Hobson is prepared to give, either in the way of suggesting that bias has after all not vitiated all the results that claim to have been already won, or as holding out hopes of improvement in the future.

Mr. Hobson tells us that "truth prevails in the long run because it is more pleasing than falsehood," and this is a hopeful view which few are likely to reject merely on the ground that it might be called "pragmatic hedonism". It is after all true (or at least few will have the courage to deny it) that some conclusions have been reached in economic and political theory which, however desirable and indeed necessary it may be that they should continually be examined afresh, will stand the test of such further examination and will emerge from it, perhaps not unaltered and unqualified, but at least with sufficient resemblance to their former state to justify them in being regarded as steps forward in the advance of

knowledge. If this is so, it seems to follow that, however small may be the number of thinkers who can escape the charge of bias and however small the portion of any man's thought that is entirely independent of any such disturbing influence, yet the results of prejudices and presuppositions do not seem as a matter of fact to have been so fatal as they might have been expected to prove. It looks as though men might still go forward in the trust that, if they are always on their guard against avoidable bias and try to be honest with themselves and others, they may reach, if not the exactness of the physical sciences, yet at least such accuracy as the subject matter admits. This may be a commonplace conclusion: but it may be none the less true or consoling on that account.

Yet, however great this consolation, it would not have been worth while for Mr. Hobson to write his book if he had not thought that a good deal of time has been lost on the way and a good many false steps taken owing to the operation of those prejudices which he analyses, and one would gladly know how such mistakes are to be avoided. Here Mr. Hobson's guidance is not quite so clear. He points to "psychology" as the main hope of the future, but that term is notoriously ambiguous, and those who do not profess to be psychologists are always asking for definitions which they do not often get. Mr. Hobson describes it as a "youthful science," and he is probably therefore not thinking of those older forms of investigation to which the name used to be given. He tells us that it will examine "religion, sex and the family, acquisitiveness and property, combativeness and self-assertiveness, particularly in their larger fields of national action". He tells us that such examinations will be regarded by many as "inconvenient": and probably they will be so regarded. But we may agree with him that it is of no use to try to limit such explorations and that the only cure for bad thought is more good thought. Few people in these days think that they can keep certain subjects outside the range of critical examination, though many people suppose their opponents to maintain this view. It is not so clear, however, in what way psychology is going to help. According to Mr. Hobson it claims "to explain the psycho-physical origins of the human actions, beliefs, and institutions, hitherto regarded as sacred and untouchable," and hopes to make that claim good in course of time. By all means let such investigation be pursued: though it may perhaps be doubted whether psychology is the best word to describe what appears to be a historical or anthropological study. But to suppose that the origins, once discovered, would necessarily reveal the full meaning of the institutions, would be to fall into one of the oldest fallacies in the history of philosophy. The true objection to the excessive claims which were at one time made for the association of ideas was not that the analysis was unsatisfactory and incomplete, but that, even if it had been complete, it would not have done what its admirers promised for it. It is not to be supposed that Mr. Hobson intends his modern psychology to repeat the same mistake. No doubt psychology will be able, when it is freed from those extravagances which he justly deprecates, to throw light on many things: "Religion, the State, Internationalism, Education, Industry, Poverty, Crime, Lunacy"—such is the rather singular selection of subjects given us by him in one place. But even if psychology succeeds in finding "ignorance, brutality, falsehood, injustice" in all these departments of conduct and succeeds further in convincing us that "insincerity is deep-seated in the language, the popular conceptions, and the formal thinking upon all these topics," how does it come to fall within the province of psychology to demand, "first a revaluation of all values by standards of ordered knowledge and humanity, and, secondly, a correlated application of this social science in revised arts of personal and collective conduct"?

It may be said that this is a question of words, and that, so long as a new train of thought is discovered which will convince men of the need of recasting much of their action in a less selfish and more social spirit, it does not much matter whether it is called psychology or not. But there seems to be something more than a question of words involved. We are entitled to know what method is going to produce this most desirable result. It is possible to carry on purely scientific inquiries without moral ideals other than those which the scientific inquiries demand for their own purposes: and an examination of institutions might be conducted with vigorous exactness but without the stimulus derived from a desire for their improvement. Those who "fear the disturbances which free psychology may bring about" might justify their fear by suggesting that destructive criticism of what many men have held sacred might be followed, so far as psychology is concerned, not by the transference of the feeling of sanctity to other objects more worthy of it, but by the removal of all feelings of loyalty and admiration. It is satisfactory to be assured that such is not the intention of psychologists: but whence does the psychologist derive these ideals which we gladly accept Mr. Hobson's invitation to admire? Does the psychologist not require a moral philosophy that is independent of his psychology? For, if psychological examination is supposed to discover these ideals from within itself, a very old question will have to be asked once more as to how far such derivation is justified. No doubt many men will accept an ideal on what claim to be scientific grounds, when they will not accept it on any other: but, if a man is induced to accept these social ideals on scientific grounds and subsequently finds that the scientific claim is unsubstantiated, will he not have cause to complain of a renewal of that insincerity from which he was to have been delivered?

It is possible to wish whole-heartedly for that revaluation which is Mr. Hobson's hope for the future, and at the same time to wonder what is the exact scope and what are the credentials of the psychology that is going to provide us with it.

P. V. M. BENECKE.

*The Development, Significance, and Some Limitations of Hegel's Ethical Teaching.* By W. S. CHANG, Ph.D. (Mich.), D.Phil. (Oxon.). Published under the auspices of the China Society of Arts and Science. Shanghai, 1925.

This book is interesting as being a very sympathetic treatment of Hegel's ethical theory by a Chinese student (now Professor) of philosophy who must naturally have come to the study of the theory with very different ideas. Its attraction for him may have lain partly in "Hegel's insistence upon the superiority of the ethical norm of the nation-state". "The spirit of the nation . . . has Right to a certain type of life, to an independent national culture. The forms of ritual, manners, disciplines, morals, customs, traditions, conventions, institutions, etc., as forms of the self-determination of the nation, as derived from this Right, are the content of the freedom of the nation" (p. 99). Dr. Chang regards this view as on the whole just, though he does not accept it uncritically.

In the Preface Dr. Chang says modestly that if Prof. Reyburn's book on the same subject had been published a little earlier, his own book would probably not have been undertaken or continued. And, frankly, it must be said that as an exposition of Hegel's theory it is not on the same level: the mere fact that the book before us gives little more than 20 pages to the exposition of the *Philosophy of Right*, whereas Rey-

burn's gives 150, is a sufficient indication of this. On the other hand Mr. Chang claims that his own book may be taken as complementary to the other, inasmuch as he has specially aimed at giving (1) a survey of the development of Hegel's thought on ethical subjects, (2) a critical appreciation of the value of Hegel's theory. It is explained in the Preface that the book was begun as a thesis at the University of Michigan, and that, when Mr. Chang came to Oxford to continue his studies there, he proposed to take up another subject, but was advised to go on with his work upon Hegel. Whether this advice has been altogether beneficial in its results may be doubted. One result seems to be that he has been led to give twice as much space (about 45 pp.) to the development of Hegel's ethics before the *Phil. of Right* as to that work itself. The opening chapters deal mainly with the early essay on *Naturrecht*, the unpublished *System d. Sittlichkeit*, and part of the *Phenomenology*, but they can hardly claim to do more than give a summary or analysis of these works, and do not contribute much to an understanding of such development as there was in Hegel's ethical thought. Chapter v. deals with the *Phil. of Right*. This is, of course, a difficult book to expound, being full of the most concrete detail; and the expositor has a choice between two methods. Either he may take sufficient space to follow Hegel into the details and try to make the whole structure and sequence of steps of the analysis as clear as he can (as Mr. Reyburn does); or else he may set himself to state freely the general drift of the main sections of the book without caring to follow closely the actual text (as Bosanquet did in a chapter in his *Phil. Theory of the State*). But Mr. Chang takes neither course. He omits much of the detail, but otherwise he tends to reproduce the statements of the text pretty closely, so that it is perhaps not unfair to say that his chapter gives, though on a larger scale, pretty much the kind of analysis that we are accustomed to get in the histories of philosophy. An example will show what I mean, though I admit it is not quite a fair one. "The idea of the State has (a) immediately actuality in the individual and particular state. As a self-concerned organism it is the national constitution or internal State-organisation or polity. (b) As external organisation or polity it passes over into relations with other States. This gives rise to international law. . . ." This is merely a translation of § 259 of the text.

The remaining chapters are devoted to the critical appreciation of Hegel's theory. Chapter vi. defends Hegel's position about the real and the rational, explains his view of freedom but criticises him at the same time for his undue 'intellectualism,' and concludes with some remarks on 'dialectic' in the ethical writings. The criticism of 'intellectualism' has not really much point against Hegel. To urge that "human reason is a single whole; its emotional, volitional, and thinking elements are . . . not separate faculties," is to quote Hegel against himself.

In chapter vii. Mr. Chang shows that he is attracted, as I suggested above, by the objectivity of Hegel's ethics, the "insistence on the ethical norm of the nation-state". In contrasting this objective attitude favourably with two others—that of subjectivism or ascetic self-discipline and withdrawal, and that of mystical union with the Absolute—he no doubt has Oriental modes of thought in view. Sympathy with Hegel's view does not prevent Mr. Chang from going on to criticise it in the conventional way as doing injustice to the claims of the individual, on the one side, and of 'fellow nations,' on the other. But since Hegel is admitted to be 'in principle' aware of the very considerations urged against him, the criticisms need not be dwelt on.

In chapter viii. Mr. Chang defends the view that ethics in general and Hegel's ethics in particular imply a metaphysical—in Hegel's case he should rather have said 'logical'—background or basis. Therein he

agrees with Mr. Reyburn, but he states the position in a more moderate and defensible form and does not drag in discussions about substance and causality into a book on ethics. It is unnecessary to deal with his general argument because he makes the issue quite clear by telling us definitely what are, in his view, the philosophical presuppositions of Hegel's ethics. "The specific principles which Hegel made use of frequently [why not throughout?] in his ethical writings are: (1) the unity of the real and the rational, or of the ideal and the actual; (2) the unity of the inward and the outward, or of the subjective and the objective; and (3) the universality of 'Dialectic' in the finite world" (p. 114). If this is all that is meant by a metaphysical basis it is harmless enough, and one need only remark that so far as such principles are used in ethics they are also proved there and not presupposed. In the latter part of the chapter Mr. Chang has some criticism upon Hegel's failure to recognise the peculiarities of 'dialectic' in the ethical sphere, and for one of the points he makes he professes himself "indebted to Senator Croce". One would have thought that little was to be gained by trying to be more technical than Hegel himself thought fit to be.

The title of chapter ix. is 'Some Specific Problems of Hegel's Ethical Teaching' but the main topic is Hegel's view of the Family. Mr. Chang urges the claims of the patriarchal or wider family against the modern Western conception as set forth by Hegel. "To Hegel," he says, "the realm of family comprises two generations only, that is, the married couple with their children. This circle is independent of the parents of the married couple, *i.e.*, it constitutes a new family without the parents as component factors. The reason he virtually gave for this is, that the real substance of the family is ethical Love, instead of consanguinity. Now, the feeling of love, Hegel thinks, cannot permeate through an extensive stock" (p. 122). This is not a correct statement of Hegel's view. His real reason for limiting the family is given with perfect clearness in § 177 and is, of course, in no way original on his part—being simply that when children are grown up they are entitled to live their own life and are no longer in subjection to their parents. The son in his turn may have a wife and family of his own. But Hegel would surely never have dreamt of denying that there may be, and normally will be, ties of mutual affection and interest between *e.g.* grandparents and grandchildren, when three generations are alive at the same time. We may concede to Mr. Chang that outside the direct line the ties of kinship soon weaken in force among ourselves, and that a good deal may be lost by this weakening of the larger kinship. But in a modern industrial society with its more mobile population this loosening of the wider ties of kinship seems almost inevitable.

The style of the book naturally enough shows traces of foreign authorship, though it is to be remembered that Mr. Chang is often reproducing the phraseology of an obscure and difficult German writer. In the title of the book the use of the word 'teaching' is unfortunate: Hegel made no pretensions to be a Confucius. Nor does the adjective 'ethical' altogether rescue the noun, for Mr. Chang does not restrict this adjective to the science, but speaks *e.g.* of 'the ethical life' and even accepts the barbarous invention 'ethicality' as a rendering for 'Sittlichkeit'. The book is well got up and printed. There are some misprints that would have been less likely to occur in a book printed here, but the only obtrusive one is 'Cirme' for 'Crime' in a heading on page 52. Perhaps Mr. Chang was unable to give a final revision to the proofs, for among the footnotes on the first twenty-five pages there are several references to later pages which have been left blank.

H. BARKER.

*Phénoménologie et Philosophie Religieuse: Étude sur la théorie de la Connaissance religieuse.* By JEAN HERING. Paris: Librairie Félix Alcan, 1926. Pp. xii, 148.

Since the war, the Faculty of Protestant theology at Strasbourg has been showing great activity, for the most part in the fields of religious history and philosophy. This book is one of the latest publications. It is clearly written as well as full of enthusiasm for the new method of philosophical inquiry usually associated with the name of Husserl. After an opening section on the "crisis" of religious philosophy, a full study of the phenomenological movement is given, and the volume ends with a careful estimate of the help that the intuitionist principle and the doctrine of essences characteristic of the movement can afford in clarifying our theory of religious knowledge. There can be no doubt that people who want an introduction to Husserl, and are interested in wider issues raised by his findings, would do well to read M. Hering with care. His work is one proof more that the recent attacks on Schleiermacher as deeply dyed with the guilt of psychologism in theology are going to be replied to vigorously from the philosophical side.

Hering believes that the phenomenologists can aid us both to keep the good of nineteenth-century thought and to improve upon it. Neither psychologism nor historism, to use these hideous but convenient terms, finds in him a friend. He gives an acute criticism of Durkheim, and explains patiently that religion must be judged by religion, not by fruits it may (or may not) produce in the extra-religious field. The failure of the "religious *à priori*" movement is recalled and interpreted. And it is urged that critical idealism can make no headway at all without metaphysical postulates quite incongruous with a purely psychological conception of what religious philosophy is. The theology that takes its point of departure merely in human consciousness is and must remain anthropocentric, and has no defence against the classical scepticism of Feuerbach. Shall we then flee for refuge to a theocentric ontology, or to an apologetic built upon the ultimate inadequacy of the scientific view of the universe? Hering pleads with us rather to give heed to Husserl, Scheler, and others of the phenomenological school. They claim to have found a practicable path.

Husserl at first spoke of phenomenology as "descriptive psychology", though afterwards he disavowed this. Hering contends that so far from being anything of the kind, it affords the only vantage-ground from which psychologism can be shot to pieces. Phenomenology is a study of "pure consciousness". No concept must be used in it or by it which is not capable of intuitive verification, and the question is whether this is a new positivism. Of intuition there are two kinds, sensible and categorical. The phenomenologist, in short, is trying to get at, and fix, the original and ultimate realities or ingredients of experience. He particularly studies *Wesen* or essences—red, for example, not considered as forming part of the empirical world but in its "constitutive essence". One description of essences is "ideal entities devoid of all empirical contingency". Kant had admitted only some few "synthetic judgments *à priori*" outside mathematics, but in view of the infinite number of relationships existing between essences Hering would say that of "laws *à priori*" there may be any number. He nowhere tells us what a law is, though this would have been useful. Red exemplifies sensible essences; Otto's concept of the Holy is (especially according to Scheler) a first-class instance of the categorical. Much that is valuable is also said of the "intentional" character of consciousness, and powerful arguments are drawn from this source for the refutation of subjective idealism. This is only the most

meagre sketch of the kind of thing Hering lays before us, on the whole persuasively; but it is impossible to put Husserl's important theories in a nutshell. It looks as if the phenomenologists wished simply to study the world of *meanings*, wholly abstracting from the question whether these meanings hold true of a trans-subjective reality or not. This will certainly not be mere psychology, but we perhaps need to hear counsel further on the point whether it really differs from at least one element in an adequate logic. I feel that Hering is apt at this juncture to use the word "perception" rather loosely. An essence being what it is, the "intentional act of consciousness" which has avowedly been stripped of all realistic significance cannot suddenly be clothed with it again by the mere use of the term "perception". True, I intuit the "essence" of red, and when I do so my mind is not looking at itself; but if essence by definition is "an ideal or intelligible entity" I may still ask how it stands related to real being. If it is always a *Sachverhalt* that properly speaking is the object of knowledge (p. 110), how do essence and *Sachverhalt* bear on each other? This point has not been cleared up.

Hering is convinced that phenomenology makes an end of all the sensualistic prejudices which have too often accompanied the modern scientific study of religion. These prejudices rest on the wholly untenable assumption that there exist only two kinds of valuable perceptions, *viz.*, sensible and internal, bearing respectively on the so-called external world and on psychical phenomena. In reality, as the new school points out, there are innumerable values that confront us objectively, each *sui generis* and independent of all empirical induction—the values of art, of morality, of truth, of religious faith. Here too we have to get at, and fix clearly, the relevant essences; and in religion the phenomenological method will consist in striving to penetrate to the intrinsic meaning of experiences such as, to take M. Hering's own instances, repentance and regeneration. Some may feel, after reading M. Hering's careful pages on these religious matters, that they have been phenomenologists all the time without knowing it, as M. Jourdain wrote prose; but this is no sound objection to the theory.

Space fails, or it might have been rewarding to follow M. Hering further in his account of self-evidence, of the relative precedence of faith and gnosis, of efforts made by members of the new group to revive and restate the ontological argument for theism, and of the objective character of mystical intuitions. He is careful to admit that phenomenology gives no direct or positive proof that atheism is false; what it does is to exhibit the intuition of God and analyse its essential content. "Beside the God who impels us in the manner of an efficient cause is the God who draws as a final cause does; and it is He precisely that is by definition the object of our religious acts, if we accept the intentionalist view of consciousness" (p. 139). At times we are left with the feeling that M. Hering's aspirations as a phenomenologist outrun his performance, and that certain of his arguments are more opaque than convincing. But his book, which is fresh and infectiously sanguine, makes clear to the most unwilling how attractive the new ways are which Husserl and others seek to open up.

H. R. MACKINTOSH.

*Religious Experience: Its Nature and Truth.* By KENNETH EDWARD, M.A., D.PHIL. Edinburgh: T. & T. CLARK, pp. x. 248. 8s. net.

THE real significance of Schleiermacher is becoming manifest more than a century after his work was published. He saw that religion was not

synonymous with Christianity nor with Theology, but rather that it was an autonomous activity of the human spirit. The implications of this were lost in Schleiermacher's own day. A century of liberating thought was necessary before the dogmatism of Theology was sufficiently relaxed, and the psychology of religion sufficiently advanced, for Schleiermacher's contention to come into its own. To-day there is an increasing tendency to start the investigation of the place and meaning of religion from the standpoint of Schleiermacher. Dr. Edward's able work affords an example of this. Whilst rejecting Schleiermacher's own definition of religion, which few to-day would accept, he recognises that it points the way towards one, or if a satisfactory definition be unobtainable, to a provisional one. Dr. Edward suggests as such "an experience of God and our relationship with Him". This opens up the way for a discussion on the nature and truth of this experience. Dr. Edward follows the method which is rapidly gaining ground at the present time. It starts from religious experience, taking it simply for what it is, a practically universal expression of the human mind. All religion implies a philosophy, because religion always is based upon what amounts to a postulate concerning the nature of reality, namely the belief that there is a sympathetic relation between reality as a whole, or the ground of reality, and human values. The question is, therefore, whether this postulate represents what is true. This is a much less ambitious inquiry than that which was once popular, the attempt to give indisputable logical demonstration of the truth of religious concepts. It simply assumes, and indeed has every right to assume, leave to put forward this postulate as a hypothesis capable of empirical verification. Although, in common with other well-supported hypotheses, it does not command universal approval, still it can offer a rational justification for itself, and has no need to shelter behind sheer sentiment and the will to believe. The phantom of logical certainty in religion is abandoned, but if the righteous man lives by his faith, he need not be ashamed of acknowledging the fact. On these lines the author develops a very sane and forcible argument, utilising a psychological basis. In one chapter he seems on the point of being seduced from his psychological groundwork, for he wavers over Otto's analysis of the numinous, an analysis which represents Otto's psychology rather than anyone else's. He tells us that "it finds the spring of that characteristic which has made religion one of the most distinctive traits of human life not in the realm of instinct which man shares with the brutes, but in a characteristic feature of human consciousness". One wonders whether the attraction of Otto to some does not lie in this. To them anything to which the clay of instinct clings is suspect. It is the Greek contempt for passion in comparison with reason, reincarnated. Otto's analysis of this primary and unique source of religion in experience, this "mysterium tremendum," seems very much like the old "religious faculty" in a new form. Such explanations have some rather ominous analogies, witness "phlogiston," "caloric," and "odylic force". The defence of religious experience is better based on ordinary psychological analysis.

Dr. Edward possesses the gift of writing clearly, he is never verbose, and he keeps his points always in view. Such qualities add to the readability and interest of his book in no small degree. Whether the argument will carry conviction depends perhaps on the standpoint and experience of the reader. Because religion is one of life's ultimate attitudes all argument about it never brings it into the region of things that argument can demonstrate. Those who have a religious experience believe it without argument, those who have not, or think they have not, are unconvinced. What then can such arguments as those of Dr. Edward afford? Prof. Scott, reviewing in *MIND* (xxxiii. 132) a book of mine

on somewhat similar lines, which Dr. Edward's argument endorses, asked how far I had vindicated, as distinct from interpreting, religious experience. But what constitutes vindication? If it mean to prove to all comers that the testimony of religious experience concerning reality is true; that is no more possible than logically to demonstrate the existence of God. But if it can be shown that such testimony can be related to a reasonable and consistent world-view, without doing violence to it or to the rest of knowledge, is that not a vindication, and can one vindicate Idealism or Realism or Vitalism in any other way? Moreover Dr. Edward shows that religious experience need not be kept apart, need not appeal to the protection of "revelation," need not conflict with experience as a whole. In this sense Dr. Edward has given a valuable argument to vindicate religious experience and its testimony to the nature of reality.

E. S. WATERHOUSE.

*Per il secondo Centenario della "Scienza Nuova" di G. B. Vico (1725-1925).*  
Roma: A Cura della *Rivista Internazionale di Filosofia del Diritto*,  
1925. Pp. 245.

This collection of studies, by sixteen distinguished writers, for the second centenary of the publication of the *Scienza Nuova* in its earlier form, shows well the extent to which not only Vico's fame, but also intimate knowledge of his work and its fortunes, has grown of late years in Italy. It is of course impossible in a short notice to give a full account of the varied information put before the reader and of the different points of view from which it is set forth. The remark of Prof. Gioele Solari that it seems to have been the fate of Vico to take colour and significance from the epoch at which his work has been studied, receives new illustration. On the one side we find stress laid on his "realism" in considering human society and the motives that explain its historical process; and this is certainly a feature of psychological thinking since the war. On the other side, Prof. Vincenzo Miceli finds special significance for the present time in the notion, which he also finds in Vico, of a universal principle of justice to which actual laws tend. The idea of this, he says, has been more stressed since the Great War as against the notion of the purely "historical" school that all laws are simply adaptations for the good of particular societies.

Most of the writers deal especially with the relation of Vico's thought to law in its political aspect; but there is one study (by Signor Fulvio Maroi) that brings out in a very interesting way the anthropological aspect. A case of Vico's peculiar insight into primitive modes of thought is noted in his interpretation of *monstra* in the legislation of the Twelve Tables. The author finds that, although Vico did not quite arrive at the true solution, he was on the right track. Exposure of children, as at first practised and permitted in antiquity, was neither from economic motives (such as came in afterwards) nor from rough eugenic notions (as doubtless in historic Sparta), but was an affair of magic. Something portentous was seen in a birth, not on any physiological ground, but from indications that were sinister for the magical art. The exposures were cases, in the phrase of S. Reinach, of "magical hygiene". If we knew the procedure at Sparta, we might even find that the actual discussions about births in the historic time still depended to some extent on such early ideas and not on questions about viability.

One study (by Signor Antonio Pagano) treats of Vico as a supporter, in the politics of Naples, of the relatively enlightened Spanish rule in face of

sectional tendencies. He was altogether for the State and its legislation as against feudal, clerical and corporate privileges and local particularisms. It is interesting to find quoted from him the thoroughly Hobbist principle that Commonwealth " *praeter uni Deo reddit rationem nemini.*"

In the two studies by Prof. Benvenuto Donati, I have had the satisfaction of finding my own choice among Vico's descriptive expressions for his New Science confirmed. Prof. Donati has found among these, " *Principles of Humanity* " ; and this, he thinks, conveys best the essential meaning of the great work. The closing study gives a very interesting account of Michelet's occupation with the Neapolitan philosopher at the time when Italian exiles were making him known in France. There is record of suggestions received from Cousin and from Dugald Stewart, and from community of reading with Quinet : but Prof. Donati's conclusion is that essentially Michelet's interest in Vico was spontaneous. The insight he derived from him was that that which creates history is the nature of man, and not a natural necessity imposing itself on man. (See also a " *Fragment* " by Prof. Alessandro Groppali.) Full justice is done finally to the immense importance of the French historian's translations and expositions in carrying Vico's ideas into general European thought.

T. WHITTAKER.

*Experimental Psychology.* By MARY COLLINS, M.A., B.Ed., Ph.D., and JAMES DREVER, M.A., B.Sc., D.Phil., F.R.S.E. London, Methuen, 1926. Pp. viii + 315.

The authors of this book have succeeded in combining very skilfully a text-book for the first-year student with an introduction to experimental psychology for the general reader. The exposition escapes the tedious formality of the ordinary text-book without degenerating into the merely popular outline. It gives a clear and straightforward account of what experimental psychologists have been doing since the founding of Wundt's original laboratory ; and the account is well balanced and comprehensive. As the authors themselves point out, the volume does not provide a substitute for the existing Laboratory manuals ; it does, however, succeed in supplementing these precisely in the way and to the extent needed by the first-year student. Much useful material hitherto accessible only in the journals has been incorporated in the general exposition. A liberal allowance of space has been given to recent lines of investigation without sacrificing the very substantial work of the pioneers which, after all, still constitutes the main claim of experimental psychology to scientific status.

The claim is made that psychology has now reached such a stage of development that it can be taught from a point of view which is definitely experimental. If this claim is not substantiated it is not the authors' fault. The defects of such an exposition, of a *purely* experimental exposition at any rate, lie in the subject itself. Experimental psychology, as we are so frequently told, is in its infancy and seems to suffer, as Prof. Spearman has remarked, from some curious infantile malady. It is confronted, moreover, by difficulties to which we find no parallel in the other experimental sciences. It has for subject matter facts which *prima facie* are *sui generis*. Its data have no well-defined status or relationship to the hierarchy of physical entities. Whilst some schools would endeavour to give scientific form to their subject by pursuing an analogy from inorganic chemistry, others prefer to take their inspiration from biology ; and no one can be sure just yet that all such analogies are not likely to prove an embarrassment rather than a help. The in many ways laudable masculine protest which the experimental psychologist feels called upon

to make against the importation of metaphysical issues into his domain has had certain curious and unfortunate results. It has perpetuated the misalliance between psychology and subjective idealism (the tacit assumption of which is generally the basis of this protest) thereby warping the whole theory of sensory experience, and it has prevented the experimental psychologist from defining to himself many of the important concepts he employs. This latter effect is the more curious since the deficiency in question is more prevalent in speculative philosophy than in the sciences. The fact of the matter would seem to be that however we may distinguish psychology from metaphysics the former continues to bristle with just the kind of difficulties which make the latter so distasteful to the experimental mind. No mere compilation of the objective data provided by experimental research suffices to constitute anything remotely like a science. Even a compilation as excellent as this one has a kind of viscous and heterogeneous texture which contrasts with the crystalline clarity of pre-relativity physics.

But when all this has been said the fact remains that the work with which this volume is concerned has amply justified itself. It is justified if only on the ground that the data with which psychology is enriched by the experimental method are data that casual unguided introspection could never have disclosed. Almost every laboratory experiment provides something to surprise and much that one could not anticipate. To record all this in a readily accessible form, even at the cost of a certain loose-endedness in the threads of exposition, meets a genuine need and presents a challenge of which future systematic expositions of the subject will have to take account.

C. A. MACE.

*Die Immanenzphilosophie, Darstellung und Kritik.* By DR. REGINA ETTINGER-REICHMANN. Göttingen, Vandenhoeck & Ruprecht. Pp. 219.

"Die Immanenzphilosophie" is the well-known type of thought which, determining to start from the immediately given and not to go beyond experience, rejects all metaphysical transcendence and with it the belief in a physical world existing apart from consciousness. It is thus opposed primarily to realism, against which the usual idealist arguments are turned, but it insists also that the object must be regarded as correlative to and not as dependent on the subject and that a transcendent self must be rejected just as much as transcendent objects. It is a philosophy of the given, a philosophy which analyses experience and is content with this, or at any rate claims to be. While the authors discussed do not think this incompatible with the use of metaphysical arguments for immortality, they view the soul as the unity of its experience and protest strongly against the idea of the soul as a subject existing apart from its objects, or again as one thing among others.

The main characteristics of this kind of philosophical thought are well-known in this country, but that can hardly be said of the particular authors discussed, W. Schuppe, J. Rehmke and R. von Schubert-Soldern. The main part of the book is occupied by a purely expository summary of these authors, criticism being confined to the last forty pages. The summary is both clear and interesting, and brings out a great number of important points in this type of thought. The criticism also, while containing nothing strikingly new, may be regarded as a very good summary of the main objections to such a position from the realist point of view and may be recommended to readers for that reason, even to those who are

not acquainted with the particular authors in question but only with the realist-idealst controversy in general. But for a book intended specially as a critical discussion of these authors the criticism is not carried out with sufficient thoroughness, important points being stated too briefly and not developed adequately. Hence, apart from the fact that it provides a useful summary of main realist lines of attack, the value of the work is rather expository than critical. As such it has considerable merits, and no serious fault can be found either with what criticism there is. The advocates of the "immanence" view, according to the authoress, claim to start from the immediate certainty of the given, but cannot really do so, for there is no such purely immediate datum. They claim not to go beyond experience as though that were equivalent to not going beyond the given, forgetting that the transcendence to which they object has already been committed when they posit the existence of other minds than their own. The independence of matter is, she holds, proved by the necessity of continuous causation which is not adequately met by our discontinuous perceptions. The authors criticised insist that causation belongs to the content of experience as content, but she thinks that they could not maintain this position consistently without admitting its independence.

A. C. EWING.

Received also:—

J. E. Boodin, *Cosmic Evolution*, New York, Macmillan Co., 1925, pp. 484, 15s.

J. Maréchal, S.J., *Le Point de Départ de la Métaphysique, Cah. V: Le Thomisme devant la Philosophie critique*, Paris, F. Alcan, 1926, pp. xxiii + 481, 30 fr.

E. Robef, *De l'Analyse Réflexive*, Paris, Jouve & Cie, 1925, pp. 177.

E. Herrigel, *Urstoff und Urform*, Tübingen, J. C. B. Mohr, 1926, pp. vi + 172, M. 6·60.

W. R. Inge, *Science and Ultimate Truth*, (Fison Memorial Lecture, 1926), London, Longmans, Green & Co., 1926, pp. 32.

V. Kraft, *Die Grundformen der wissenschaftlichen Methoden*, Vienna, Hölder-Pichler-Tempsky, 1926, pp. 304, M. 9·40.

E. G. Selwyn (edited by), *Essays Catholic and Critical*, London, S.P.C.K., 1926, pp. 452, 10s. 6d.

H. M. Repton, *Some Postulates of a Christian Philosophy*, London, S.P.C.K., 1925, pp. viii + 261, 7s. 6d.

T. A. Bowhay, *Life and Man*, London, J. Cape, Ltd., 1926, pp. 320, 9s.

A. Clutton-Brock, *The Ultimate Belief*, 6th Printing, London, Constable & Co. Ltd., 1926, pp. 107, 3s. 6d.

I. C. Ishyam, *The Ego and Spiritual Truth*, London, C. W. Daniel Co., pp. xiv + 182, 7s. 6d.

J. von Uexküll, *Theoretical Biology*, London, Kegan Paul, Trench, Trubner & Co. Ltd., 1926, pp. xvi + 362, 18s.

D. B. Mair, *Fourfold Geometry*, London, Methuen & Co. Ltd., 1926, pp. viii + 183, 8s. 6d.

E. Swoboda, *Das Allgemeine Bürgerliche Gesetzbuch im Lichte der Lehren Kants*, Graz, J. Meyerhoff, 1926, pp. 318, 28s.

É. Bréhier, *Histoire de la Philosophie, Tome I. 1, Période Hellénique*, Paris, F. Alcan, 1926, pp. 262, 18 fr.

P. Dahlke, *Der Buddhismus*, Leipzig, E. Reinicke, 1926, pp. 255, M. 9.

S. K. Maitra, *Ethics of the Hindus*, Calcutta University Press, 1925, pp. xvii + 344.

A. A. Jascalevich, *Three Conceptions of Mind*, New York, Columbia University Press, 1926, pp. ix + 107, 82.

M. Grabmann, *Mittelalterliches Geistesleben*, Munich, Max Hueber, 1926, pp. xi + 585, M. 20·80.

H. Pflaum, *Die Idee der Liebe: Leone Ebreo*, Tübingen, J. C. B. Mohr, 1926, pp. iv, 158, M. 6.

E. Namer, *Les Aspects de Dieu dans la Philosophie de Giordano Bruno*, Paris, F. Alcan, 1926, pp. 159, 15 fr.

D. Nedelkovitch, *La Pensée Philosophique Créatrice de Pascal*, Paris, F. Alcan, 1925, pp. 62, 6 fr.

M. Muller, *Essai sur la Philosophie de Jean d'Alembert*, Paris, Payot, 1926, pp. 311, 25 fr.

E. Robef, *Leibniz et Maine de Biran*, Paris, Jouve & Cie, 1925, pp. 133.

M. Foucault, *Cours de Psychologie, Tome I: Introduction Philosophique à la Psychologie*, Paris, F. Alcan, 1926, pp. 238, 15 fr.

A. Mochi, *Les Fondements, les Limites, et la Valeur de la Psychologie Scientifique*, Cairo, Institut Français d'Archéologie Orientale, 1926, pp. 67.

P. McBride, *The Riddle of Personality*, London, W. Heinemann, Ltd., 1926, pp. viii + 190, 6s.

F. Krueger (edited by), *Komplexqualitäten, Gestalten und Gefühle* (Neue Psychologische Studien, Bd. I), Munich, C. H. Beck, 1926, pp. 692, M. 35.

F. Krueger and A. Kirschmann (edited by), *Licht und Farbe* (Neue Psychologische Studien, Bd. II), Munich, C. H. Beck, pp. 442, M. 32.

*Psychological Studies from the University of Mysore*, Vol. I, July, 1926, Mysore, Government Branch Press, 1926, pp. 71, 2s. 6d.

H. L. Hollingworth, *The Psychology of Thought*, London, D. Appleton & Co., 1926, pp. 328, 10s. 6d.

A. S. Woodburne, *Human Nature and Education*, London, H. Milford, 1926, pp. ix + 292, 12s. 6d.

W. McDougall, *An Outline of Abnormal Psychology*, London, Methuen & Co. Ltd., 1926, pp. xvi + 572, 15s.

H. Head, *Aphasia and Kindred Disorders of Speech*, 2 vols., Cambridge University Press, 1926, pp. xiv + 549; xxxiii + 430, £3 3s.

W. H. B. Stoddart, *Mind and its Disorders*, 5th Edition, London, H. K. Lewis & Co., Ltd., 1926, pp. xx + 593, 21s.

M. P. Leahy, *The Mind in Disease*, London, W. Heinemann, Ltd., 1926, pp. 178, 6s.

W. B. Blanton, *A Manual of Normal Physical Signs*, St. Louis, C. V. Mosby Co., 1926, pp. 215, \$2·50.

R. Eager, *Hints to Probationer Nurses in Mental Hospitals*, 2nd Edition, London, H. K. Lewis & Co. Ltd., 1926, pp. 88, 1s. 6d.

*Metropolitan Asylums Board Annual Report for 1925-6: Mental Diseases Section*, London, Office of the Board, 1926, pp. 175-240.

W. Penn, *Some Fruits of Solitude*, Reprinted, London, Constable & Co. Ltd., 1926, pp. xxxii + 170, 3s. 6d.

C. Tolly, *Knowledge and Dream*, London, Hodder & Stoughton, Ltd., 1926, pp. 63, 3s. 6d.

S. C. Tickell, *Psychology really Simplified in Terms of Machinery*, 1926, pp. 22, 1s.

## VII.—PHILOSOPHICAL PERIODICALS.

BRITISH JOURNAL OF PSYCHOLOGY. xvi, Part 3, January, 1926.

**F. Aveling.** 'The Standpoint of Psychology.' [Discussing the present confusion in psychology, emphasises the need for distinguishing the subject matter and method of the science from those of other sciences; suggests that some reality is directly given in experience, that this reality is the Self, examines Miss Calkins' investigations and gives further introspective evidence concluding that the Self is immediately experienced as a bare entity acting in some way; distinguishes this from concept of the Self; suggests that this immediate experience justifies the form of language used by psychologists.] **Mary Whiton Calkins.** 'Converging Lines in Contemporary Psychology.' [Examining briefly behaviourism, Gestalt-psychologie, psychophysical parallelism, psychological personalism, and the study of the Unconscious, maintains that all agree in protesting against the atomistic conception of psychology and in the conception of psychology as the study of a unified being in varying relation to its environment; concludes with emphasising importance of stressing agreements rather than differences between the different systems.] **L. S. Penrose.** 'Some Experiments upon Inhibition and Suggestion.' [Describes experiments to examine the tendency to remember incorrectly under given conditions involving suggestion or inhibition.] **Elmir Culler.** 'On Thermal Sensitivity and the Nature of Sensory Adaptation.' [Describes experiments evidencing that the organism is equally adaptable to temperature within normal range of stimulation, suggests that any form of sense experience is a sign of temporary mal-adjustment to situation.] **H. G. Stead.** 'Factors in Mental and Scholastic Ability.' [Gives experimental data in support of thesis that three factors are involved, the total energy of the individual, the amount of energy 'graded' or under control, and the firmness of this control; analyses results of tests and shows that intelligence tests may select pupils of high intelligence and high degree of control and pupils of high intelligence with small degree of control.] **M. D. Vernon.** 'On Certain Effects of Long Spells of Repetitive Work.' [Suggests that individual differences are great, that those who can detach attention from the work in hand do not find repetitive work boring or irritating, and that those who cannot are probably unsuitable for such work because of variability of performance, liability to boredom and discontent and to accidents.] **Henry Binns.** 'Discrimination of Wool Fabrics by the Sense of Touch.' [An account of experimental investigations.]

Part 4, April, 1926. **H. Banister.** 'Three Experiments on the Localisation of Tones.' [Describes experiments suggesting that binaural phase differences are appreciated in a manner distinct from the appreciation of binaural intensity differences.] **H. Hartridge, R. J. Lythgoe, and W. V. Matthews.** 'Effects on Vision of Replacing Continuous by Flickering Illumination.' [Gives evidence on perception of shape of small black and white objects, stereoscopic vision, colour perception, peripheral colour vision, peripheral appreciation of movement, pupil reflex, and speed of reading, showing that results for the two types of illumination are practically identical except appreciation of movement in slow flicker.] **A. H. H. Fraser.**

'Chain Instincts in Lambing Sheep.' [Defining chain instincts as instinctive behaviour in which the successive phases follow in a constant and definite order suggesting that the completion of one phase acts as stimulus for the appearance of the next, holds that the behaviour of lambing sheep fits in with this, the normal stages being isolation, making a bed, parturition, cleaning and suckling lamb and return to flock; discusses cases of lamb theft.] **A. Barbara Dale.** 'Group Tests in Reasoning Ability.' [Investigates the possibility of constructing from such tests as Burt's Reasoning Tests a reliable group test of reasoning ability that could be administered, scored, and interpreted without expert knowledge or training; gives samples of tests devised and results obtained in England and America.] **F. Aveling.** 'The Psychology of Conation and Volition.' [An exposition of the elementary psychology of Conation and Volition based upon introspective evidence of so-called Will-acts; finds origin of concept of conation in experience of Self-doing-something; this yields principle that every living organism tends within the limits of its life cycle towards preserving its own integrity; discusses conation at instinctive level, and involuntary choice, giving principles of desire and of choice; maintains that after perception of alternatives, elaboration, and evaluation of motives the process changes to a predominantly conative one through the identification of a value as a motive with the Self as conceived by us and that from the awareness of the Self as choosing arises the concept of freedom which is thus anterior to that of determinism.] **W. V. Bingham.** 'Personality and Vocation.' [A note on the relation which investigators have found to exist between introversion and certain vocational interests.]

**JOURNAL OF PHILOSOPHY.** xxiii, 10. **J. Dewey.** 'Events and the Future.' [A criticism of C. D. Broad's account of their relation in his *Scientific Thought*. He is said to follow Whitehead in making events fundamental, but then puts ultimate scientific objects, regarded as 'eternal,' behind and under events. The result is that he "first nominally introduces duration into his 'events' and then takes pains to eliminate all temporality from them. Having done that he is obliged to reintroduce time by a succession of arbitrarily assumed interruptions or jerks, called *becomings*"]. **E. A. Singer, Jr.** 'Æsthetic and the Rational Ideal. II.' [Shows first that Art is not limited to the beautiful, but may be found wherever a purpose is successfully achieved. Yet it is not merely teleological. Then it is laid down that Art is (1) a creation by a social being already possessed of purposes definable without reference to art, (2) that so far as, leaving these ends unchanged, it improves the means, it is *technical* art, (3) that this art gives rise only to the categories *better* and *worse* and not to the *beautiful*, (4) that "only the art whose purpose is to change the purposes of the beings to whom it is addressed is *fine art*," and (5) that the artist must be "a messenger of discontent". Moreover, as "art may not teach," it does not advocate any new ideal, though it "creates the creator of ideals".] **H. A. Wolfson.** 'Towards an Accurate Understanding of Spinoza.' [A reply to J. Ratner's criticisms in xxiii, 5.] xxiii, 11. **E. A. Singer, Jr.** 'Æsthetic and the Rational Ideal. III.' (After discussing the tragic and the comic as 'moods,' decides that (1) "all (complete) art is essentially tragic," (2) "beauty is that quality of a work of art which makes its tragic turning a moment inspired by a triumphant mood of new creating," (3) "The ideal of this creating is a world-more-rational, not a world-more-beautiful," (4) "the value of beauty to life is its inspiration to a soul in travail," (5) "the aesthetic motive presupposes a 'rational ideal'; the rational is not to be defined in terms of the aesthetic". Thus art, holds no unmitigated comedies, always energises and never soothes, must always be somewhat

bitter, never wholly sweet, and the ugly and neutral are essential to it and make its beauty possible.] **S. P. Lamprecht.** 'The 27th Annual Meeting of the Western Division of the American Philosophical Association.' **H. R. Smart.** 'On Mathematical Logic'. [A reply to a review by Prof. Lewis in xxiii, 8.] xxiii, 12. **F. J. Teggart.** 'The Humanistic Study of Change in Time.' [Declares that the attempts "to bring the phenomena of human society within the scope of the method of science" have failed and traces this failure to "the assumption of the earliest Greek philosophers that change in time, in human culture and organisation, is analogous with the change exhibited in the life cycle or development of the organic individual". For this analogy "is intimately associated with the methodological assumption that investigation of any sort, if it is to be 'scientific' must follow the procedure of physics," and hence humanistic inquiry must abstract from "the changes which are brought about by 'historical' or 'accidental' occurrences." But the life cycle analogy is inadmissible and "the procedure of physics inapplicable in the study of change in time".] **R. H. Dotterer.** 'Science as Symbol and as Description.' [Agreeing that philosophy's business is to harmonise "the hypotheses which are regarded as established by competent workers in the various fields of scientific investigation" and also that, beyond this, it is concerned with the achieving and conserving of values, he yet demurs to the argument of M. C. Otto's *Things and Ideals*, that as sciences are not literal transcripts of reality but highly selective constructs of the human mind, not discoveries but inventions, ideals may be upheld with little regard to the constructions of mechanistic science. He urges that "a theory of values is logically subsequent to a theory of reality," and that the philosopher must be a medical examiner before he is a friendly counsellor. Both parties to this controversy appear to have overlooked that theories of reality also are human values in ultimate analysis, and that sciences and values alike must maintain themselves empirically by their working.] **H. E. Cory.** 'The Significance of Artistic Form.' ["Beauty is not wholly in the object called beautiful or in the person who calls it beautiful. It is in both as they are drawn together. It is a relation. It is a mystical marriage in which both lose themselves to save themselves."] xxiii, 13. **A. G. A. Balz.** 'Evolution in Morals or the Evolution of Morals?' [Moralises on the vague uses of 'evolution' and concludes: "there may be one vast Cosmic Evolution. If it be there, perhaps we shall discover it. But in the meanwhile, for the life of mind and the encouragement of art, there seem to be not one but many evolutions".] **H. B. Smith.** 'The General Solution of Multiple Implication.' Contains also a long review of Warner Fite's *Moral Philosophy*. xxiii, 14. **F. Anderson.** 'Intuition.' [This is defined as "the talent of judging aright upon imperfect materials" and taken as "a development of *a priori* knowledge," while *a priori* knowledge is essentially "the sudden vision of a relation". Relations are "mental categories" and "we can see at once why there can be no arguing about them, why they are self-evident". (The questions of whether the relation perceived is relevant, and of how the 'rightness' of a judgment is to be estimated, are not discussed. Judgment is "the intuition of relations". Intuition however is "not an independent faculty . . . but is inextricably mingled with all intellectual processes"; "there is no such thing as a faculty of intuition".] **H. W. Wright.** 'Value, Subjective and Objective.' ["If we mean by value the capacity of objects to afford satisfaction to individuals there is no doubt that values exist . . . but the objectivity of values means more than this." However "the values which we discover in existing things by these distinctively human responses of rational discourse, practical adaptation, and aesthetic ap-

preciation, form a system just as truly as physical objects do," and their objectivity is established "in the same way that our perceptions and conceptions of physical existence are proved objective".]

INTERNATIONAL JOURNAL OF ETHICS. xxxvi, No. 1, Oct., 1925. **A. K. Rogers.** 'The Ethics of Mandeville.' [Outlines the ethical realism underlying Mandeville's satire, shows relation of his genetic theory to his economic theory and to the views of his contemporaries.] **Louis Arnaud Reid.** 'Evils and Evil.' [Develops the view that evil arises through mal-adaptation of man as a physical, an intelligent and a moral being to his environment.] **T. V. Smith.** 'Co-operation as an Equalitarian Sanction.' [Maintains that development has taken place through domination, to competition, to enlarged co-operation in religion, government and industry, and that equality was the explanation of co-operation; suggests that equality must mean co-operation in the formation of ideals.] **Everett W. Goodhue.** 'Economics as a Social Philosophy.' [Outlines the history of economic theory; maintains that attempts to treat it as a positive science have failed and suggests that it is becoming necessary for economists to recognise ideals.] **Julius Seelye Bixter.** 'Mysticism and the Philosophy of William James.' [Suggests that mysticism solves the conflict between the assertiveness of the will to achieve and the longing for peace, that it suggests a release from the phenomenism of James' religious pragmatism and that the mystic has his 'piercing intuitions' which can be trusted against the authority of tradition.] **Ralph Mason Blake.** 'On Natural Rights.' [Maintains that the attempt to derive moral laws from a consideration of the facts of nature as studied in the various sciences is doomed to failure since these exclude all matters of value; holds that distinctions of value are a part of nature, that the only experiences which satisfy have intrinsic positive value, that from such natural principles as 'happiness is itself a good' principles of conduct can be derived, and that natural rights are those freedoms which any individual ought to be allowed to claim in that they are a condition for the realisation of the natural principles.]

No. 2, January, 1926. **Bruno Bauch.** 'The Development of Ethical Problems in German Thought since the War.' [Summarises main lines of ethical development showing that Kantian influence is still powerful but that the movement is from the purely formal aspect to the material content of the entire realm of ethical values; shows that the modern tendency is to relate the ethical meaning of the problem of personality and community to such sciences as jurisprudence, political science, economics and education.] **C. Delisle Burns.** 'Making the International Mind.' [Assumes that hostility is due partly to primitive impulses and partly to ignorance of our own nation; suggests that removal of the latter will be followed by sublimation of the former; discusses various changes in educational subject-matter and system by which the new ideals can become operative.] **William Orton.** 'The Sources of Natural Law.' [Maintains that our legacy of political theory has proved inadequate to the needs of a rapidly changing social order; discusses political aspect of the problem of the one and the many; traces the transition from one connotation of term law in Greek and Roman thought to others, and the development of two possibilities, the solution of social conflict in the Platonic idea of harmony, and the emphasis upon an objectified divine element; analyses reasons why the Stoic idea of human solidarity as the basis of prescriptive law has received little attention; concludes that we must fall back upon scientific empiricism and upon efforts to make human solidarity an experience of the average man.] **R. G. Collingwood.** 'Economics as a Philosophical Science.' [Propounds

the thesis that the fundamental concepts of economics, value, wealth and the like, are various attempts to describe a certain form of action, that in which we do what we do not want to do in order that we may do what we want.] **Fred. R. Morrow.** 'The Approach to the Problem of Moral Worth.' [Seeks by examining various approaches to discover which most nearly strikes to the heart of the problem; holds that self-expression, the emphasis upon society, and emphasis upon intelligence are peaks of lower stages of moral development and that we need to realise the importance of effort by man as a unified being.]

**REVUE DE MÉTAPHYSIQUE ET DE MORALE.** 32<sup>e</sup> Année, No. 3, Juillet-Septembre, 1925. **V. Delbos.** *Les facteurs Kantiens de la philosophie allemande de la fin du xvi<sup>e</sup> siècle et du commencement du xix<sup>e</sup>.* —IX. *La méthode de démonstration chez Hegel.* [A further instalment of the series of studies, begun in 1919, on the influence of Kant on philosophical thought in Germany during the sixty years succeeding the publication of the *Kritik der Reinen Vernunft*. The present instalment traces the anticipations of the dialectical method in Kant's theory of categories and of antinomies, and compares the use of the method made, respectively, by Fichte and Hegel.] **E. Dupréel.** *Convention et Raison.* [Starts from the traditional antithesis between *a priori* principles, upheld by rationalists as inherent either in the nature of things or in the constitution of the mind, and of conventions, upheld by empiricists and sceptics as artificial creations of human will. Ends by advocating the view that conventions are the highest expressions of reason; that rationalists, in opposing fixed *a priori* principles to conventions as inherently irrational, have been false to their rationalism; that, in fact, *conventionnalisme* is *ordinalisme* and, therefore, *rationalisme* of the purest and most systematic kind. A convention creates an organisation, a unified whole, a co-ordinated system of activities, out of interests and desires that are always diverse, and may even have been in conflict with each other until adjusted by the convention. A convention, thus, always effects a synthesis of terms, or individuals, into a unity, or whole, which is both genuinely new and represents a higher level of life and thought.] **L. Bachelier.** *Quelques curiosités paradoxales du calcul des probabilités.* [Shows that a number of so-called paradoxes resulting from the calculus of probabilities are not really paradoxes at all, but spring either from the failure of common-sense (*le bon sens*) to grasp subtle mathematical distinctions, or from making inadequate assumptions in putting the problem.] **G. Bénézé.** *Qu'est-ce qu'un système de référence?* [A very acute discussion of the concept of a "system of reference" in the mechanical theory of motion. Points out that we tend to confuse, or fail to distinguish, two points of view, *viz.*, (a) the domain of "primary and immediate" (sensible) experience, in which the movement (or rest) of an object is related to a system of reference which, for perception, is itself unique, unchanging, at rest (*e.g.*, movements of objects on the surface of the earth, or movement of the sun relatively to the observer on the earth); (b) the domain of "secondary or mediate" experience in which, by thought or imagination, we arbitrarily choose or posit a system of reference, not necessarily itself an object of perception, but assumed *ad hoc* to be once more unique, unchanging, at rest. Abstract kinematics is merely the "geometry of motion": any system of reference will do, though some are more convenient than others. We can construe the motion of a billiard-ball equally on the assumption that the ball moves relatively to the table and on the assumption that the table moves relatively to the ball. But in physics our choice cannot be so arbitrary. Here we recognise only the former interpretation of the facts as the "real" movement. Why? Because here

we have to do, not merely with changes of position in space construed in relation to an arbitrarily chosen system of reference, but with "matter" which has mass, and motions which are "absolute" in the sense of being motions "in themselves" apart from any system of reference, though capable of being construed by relation to any system we select. This suggests finally a Critique of Pure Sensibility as a complement to Kant's Critique of Pure Reason.] **E. Bréhier.** *Le concept de religion, d'après Hermann Cohen.* [A critical review of Cohen's *Der Begriff der Religion im System der Philosophie* (1915). Cohen's aim is to appreciate the essential nature of religion and its function as a factor in human culture. From this point of view, religion is not a metaphysical theory, but a moral way of life. Its problem is not to explain the universe, and to justify evil as part of a divine world-plan, but to use evil as a stimulus and occasion for the higher moral development of man. The function of religion in culture is to affirm and secure the moral salvation of the individual. Cohen's interpretation of religion, thus, reflects rather the Hebraic moralism of the Old Testament, than the Greek pantheism which colours so much Christian thought.] **V. Jankelevitch.** *Georg Simmel, philosophie de la vie.* [Continues the critical review of Simmel's life and work, begun in the preceding issue of the *Revue*. This concluding instalment deals with Simmel's concept of *Die Tragik der geistigen Kultur*—the contradiction at the very heart of all life, whether physical or spiritual, that living is also dying, that self-realisation is also self-sacrifice, that creative impulse needs, and yet is hampered and even killed by, the forms it creates. In conclusion, the reviewer points out that Simmel's thought is symptomatic at once of a tendency in contemporary Germany towards mysticism, and of the feverish unrest, the vain search for stability and self-possession amidst the many-sided stimulations of modern civilisation, which are characteristic of the city-dweller. There is nothing distinctively or exclusively Jewish about Simmel's thought.] **G. Davy.** *Arbitrage et Société des Nations.* [A chapter from a forthcoming book on *Éléments de Sociologie*, giving an account of the movement towards international arbitration, and concluding with a discussion of what the League of Nations is doing in order to make arbitration effective.] New books, French and foreign. Periodicals. Obituaries: Alois Riehl; Baron Friedrich von Hügel.

No. 4, Octobre-Décembre, 1925. **G. Séailles.** *Le pluralisme de Renouvier.* [A chapter, published posthumously, from a projected book on *Pluralisme dans la philosophie contemporaine*. It differs in arrangement, but not in substance, from the corresponding sections of the same author's *La Philosophie de Renouvier*. Thus, in reviewing Renouvier's pluralism in its logical and metaphysical aspects, the article merely retraverses familiar ground.] **J. Renaud.** *Observations sur l'idée de valeur considérée dans ses rapports avec la société.* [The authoress submits Durkheim's doctrine of the social character of values to a searching criticism. In part she devotes herself to the clarification of concepts, e.g., *social*, *asocial*, *sociable*, *luxe*, *utile*, *nécessaire*, *superflu*, etc., by means of excellently analysed illustrations. In part, she points out that individuals make valuations uninfluenced by any social example or pressure, or resist the acceptance of valuations which their social group tries to force upon them by education or public opinion.] **J. Rueff.** *L'Économie politique, science statistique.* [This article is to form the Introduction to a book on *Théorie générale des phénomènes monétaires*. Its main purpose is to make clear the nature of statistical laws by an elaborate analogy between the large scale phenomena (*phénomènes globules*) of economics and the theory of gases, and the multitude of small scale phenomena in the form of human actions and molecular movements, of which the former are the

gross result.] **P. Césari.** *La généralisation mathématique.* [A critical examination of Goblot's thesis that mathematical reasoning does not follow the laws of syllogistic reasoning, on the ground that the latter deduces from the more general to the less general, whereas the former is always generalising. An incidental problem concerns the use of polysyllogisms. After distinguishing different procedures in mathematical generalising, the author tries to show that certain types of polysyllogisms can be employed equally in mathematical generalisation and in ordinary logical reasoning. In other words, syllogistic reasoning can generalise: "the passage from the less general to the more general can be discerned in all deductive reasoning".] **E. Gilson.** *La pensée religieuse de Descartes.* [A critical review of Henri Gouhier's book of the same title, which received the Prix Trubert in 1924 from the *Académie Française*. Against Gouhier's thesis that Descartes remained at bottom a Thomist, especially in respect of his theory of the relation of faith and reason, M. Gilson marshals the evidence for the Augustinian strain in his philosophy.] **F. Buisson.** *L'École unique.* [Discusses the report of a Committee on School reform, appointed by the French Minister of Education. The problem is for the State to give to all children the same facilities for free education, whilst making this education sufficiently diversified to develop to the utmost every kind of specialised ability which can be of social service.] Table of authors. Table of articles. Table of supplements. New books, French and foreign. Periodicals. Obituary: René Quinton. Announcement of the 6th International Congress of Philosophy.

33<sup>e</sup> Année, No. 1, Janvier-Mars, 1926. **F. Colonna d'Istria.** *La psychologie de Bichat.* [The last of a series of studies of the work of the physiologists and physiological psychologists at the end of the eighteenth and the beginning of the nineteenth centuries, whom the author regards as the forerunners of Wundt, Ribot, Taine, and the experimental psychologists generally. The article concludes with a discussion of the influence of Bichat's theories on Auguste Comte, Maine de Biran, Schopenhauer, Ravaission, Cournot.] **L. Brunschvicg.** *La philosophie d'Émile Meyerson.* [Gives a clear account of how Meyerson's thought is dominated by the antithesis of philosophical and scientific reasoning. (The antithesis appears to be identical with Cassirer's distinction between *Substanzbegriff* and *Functionsbegriff*). The bias of philosophy is realistic, ontological, towards substances and causes. The bias of science is towards functions, relations. Hegel represents the pure type of philosophical, Einstein of scientific, reasoning. Yet reason must be one in both these apparently divergent forms.] **R. Havre.** *Logique formelle and logique empirique.* [Distinguishes between "formal logic," or the "logic of negation," in which the law of excluded middle applies to the pair of terms "true" and "false," and "empirical mathematical logic" which recognises the "absurd" in addition to the "true" and "false," in such wise that whilst the absurd implies the false, the false does not necessarily imply the absurd. Then follows a sketch of the principles on which such an empirical logic would have to be built up. The author supports his argument exclusively by examples from mathematical "experience".] **P. Mouy.** *Note sur la méthode de récurrence et l'idée de nombre entier.* [A brief criticism of Poincaré's treatment of the method of recurrence, in his *La Science et l'Hypothèse*, as an unending sorites, analogous to mathematical induction. According to the author, the argument is not a sorites, but an enthymeme in *Barbara*, in which the major premise, *viz.*, the definition of number, is implicit.] **R. Aron.** *Note sur le pari de Pascal.* [Argues that Pascal's famous wager has hitherto been universally misunderstood, even by Lachelier. Analyses the total wager into two wagers, both of which must succeed together. The first is the

wager on the existence or non-existence of God. The alternatives being equal, the chance of success is 1 : 2. This first wager is a necessary, but not a sufficient, condition of salvation. The second wager is based on the chances of salvation: "Many are called, but few are chosen." Without belief in God's existence, there is no chance of salvation at all; with this belief there is a chance, but it is only 1 :  $\infty$ . Still, it is reasonable to commit oneself to both wagers, for one is staking only one's present finite life against a chance, however remote, of eternal life and infinite blessedness.] **L. Weber.** *Le langage et la Pensée, par Henri Delacroix.* [A critical review of Delacroix's book of that title. After a careful exposition, the reviewer passes to a criticism of Delacroix's thesis that all thought is symbolic, i.e., that we no not think except by means of symbols.] **M. Goueroult.** *Le système fichtéen de morale concrète, d'après M. Gurwitsch.* [Review of Gurwitsch's *Fichtes System der Konkreten Ethik*, chiefly important for distinguishing three stages in the development of Fichte's philosophy.] **R. Lenoir.** *La philosophie devant la guerre.* [Voices the discontent of the post-war generation of students with the breach in the continuity of the intellectual tradition of France, made originally by the French Revolution, but not restored even after the war had emancipated French thinkers from the spell of German philosophy. Demands a revival of the characteristically French tradition.] New books, French and foreign. Periodicals. Obituary: Colonna d'Istria.

**REVUE NÉO-SCOLASTIQUE DE PHILOSOPHIE.** xxvii<sup>e</sup>me Année, 2<sup>e</sup>me série, No. 10, Mai, 1926. [A memorial issue dedicated to Cardinal Mercier and composed of a series of articles by his pupils, dealing with different sides of his personality and teaching. It would be out of place to submit the issue to criticism in the ordinary fashion. One may remark that the total effect of the articles is to give an impressive presentation of what must have been a very striking and charming personality. We in England think of Mercier mainly as an eminent ecclesiastic who had the opportunity, during the German occupation of Belgium, to prove himself also a great and a sane patriot. It is well to be reminded that he was also, in early manhood and in his prime, a University teacher of the highest eminence. As Professor of Philosophy he was already, even before the publication of the encyclical *Aeterni Patris*, inaugurating the revival of Thomism, which has meant so much in the history of contemporary philosophy. And he, more than any other man, is responsible for setting Thomists themselves the task of understanding and appreciating the more "modern" developments of philosophy, and proving their metaphysical doctrine capable of assimilating the teaching of modern experimental science in its entirety. To him Louvain owes the foundation of her distinguished *Institut supérieur de philosophie* and the admirable practice of having courses in the various sciences delivered with the special object of meeting the needs of the student who is interested in methods and principles rather than in results. Would that similar courses, with Professors of first-rate standing to conduct them, were a feature of all our universities. The titles and authors of the various articles are as follows. **M. De Wulf,** *Le philosophe et l'initiateur.* **L. Noël,** *Le psychologue et le logicien.* **N. Balthasar,** *Le métaphysicien.* **C. Harmignie,** *Le moraliste.* **L. Legrand,** *L'esthéticien.* **P. Charles,** *L'écrivain spiritualiste.* The essays are followed by a bibliography of Mgr. Mercier's numerous writings.

Even in such a notice as this I can hardly avoid saying that some of the charges brought against Kant as a moralist in M. Harmignie's essay seem founded on a strange misconception of his teaching. Kant certainly never told humanity "thou art God". On the contrary, his denial that any being but God can have a "holy will" seems to be an exaggerated protest

against the deification of mankind. And I cannot, for the life of me, follow the logic by which Kant's distinction between legality and morality is made responsible for the doctrine that a state has a right to disregard the moral law in the interests of national ambition. I can conceive no thesis which would have disgusted Kant more. Kant's second *Critique* has, in my opinion, never been really understood in this country; if Mgr. Mercier, as seems to be implied, found these doctrines in it, I can only suppose that it has been equally misunderstood in Belgium. I regret this the more that the misunderstanding involves a complete misreading of the simple and lovable character revealed to us by Kant's correspondence.]

**RIVISTA DI FILOSOFIA.** Anno xvi, N. 3, Iuglio-Settembre, 1925. **Francesco di Sarlo.** *Il discredito della filosofia.* [That the interest in philosophy has never been so lively nor the sympathy so open, in Italy, as it is at present, but that the philosophy itself which is taught is the emptiest of generalisations and vague ambiguities—is the theme of this vigorous paper. There can be no philosophy except as a science among other sciences, namely the science of consciousness; and di Sarlo finds the chief danger of the "philosophical dilettantism" of Italy to lie in the lack of any scientific content or significance in its philosophy, and in the premature attempts to apply the latter—uncriticised and unexamined—to political and ethical problems.] **Vincenzo Cento.** *Tra il fenomenismo di Guastella e il realismo di Troilo.* [An answer to Troilo's criticism of Guastella, that the latter's phenomenism is really a form of absolute idealism, and that all modern philosophy is concerned with the struggle for position between absolute idealism on the one side and realism on the other. Placing Troilo as an "absolute realist," Cento seeks to show that there is another way of philosophy in which the truth both of idealism and of realism may be brought out, and their opposition harmonised. The work both of Guastella and of Troilo is highly appreciated.] **Carlo Mazzantini.** *Nota sul primato dei problemi ontologici.* [The priority in philosophy of ontological problems over epistemological. Philosophy is a methodical reflexion upon the truths already known to "common sense". The *Als ob* in philosophy is a mere play of words.]

N. 4, Ottobre-Dicembre, 1925. **Adolfo Levi.** *Il problema dell'errore nella filosofia di Rosmini.* [Error, in Rosmini, results from an abuse of free will, as St. Augustine, Descartes, Malebranche had, in various ways, taught. Levi's central criticism is that Rosmini confuses the teleological activity of thought with will in its true and proper sense. The view that error is "willed" is completely untenable, and has led Rosmini, *inter alia*, to the paradox that acts of will may occur for which we are not responsible.] **Antonio Banfi.** *Lineamenti di una sistematica degli studi religiosi.* [A study of the re-nascence of the religious spirit—one of the most characteristic expressions, it is claimed, of contemporary culture. Philosophy, both in the East and in the West, has sprung from religious speculations, and is still deeply rooted in them; but it can succeed in its aims only by becoming independent of all such "valuations" as those of the religious consciousness. Spinoza, Bosanquet, Alexander are given as instances of the contamination of theoretic categories by religious concepts. The theoretic account of the religious life cannot be wholly worked out either in the philosophic field, or in the historical, or in the psycho-sociological; "imposing on each of these an infinite task, it acquires a positive meaning only in the systematic unity which it establishes between them". In small compass an extraordinarily wide range of topics is discussed.]

## VIII.—NOTES.

### THE NATURE OF COLOUR ASSOCIATIONS.

WITH the help of my senior students in Psychology, I had the test described by Mr. T. K. Slade in his article, "An enquiry into the Nature of Colour Associations" (MIND, Vol. xxxiv., 455, October, 1925), translated into Urdu, and applied to 523 Indian boys of ages 10 to 16 in sixteen classes in two schools in the North Punjab. By discussion and revision I obtained a translation, which, I was satisfied, made a comparison with the results obtained in England as nearly satisfactory as possible. Three names of qualities—"safety," "self-confidence," and "loneliness" were difficult to translate, and the exact Urdu equivalents were difficult words for the younger boys to understand. (This seems to explain in part the facts, that there are fewer associations with these words, and that there is little or no uniformity in these associations.) I could discover no accurate equivalent for the English word "brown". The word used means "sand-colour" or "grey-brown," but it is vague like our English "grey," and is evidently an "uninteresting" colour. In carrying out the test, I followed the procedure described by Mr. Slade in every detail.

The following tables give the results collected from the 523 boys:—

	RED.	YELLOW.	BLUE.	GREEN.	BROWN.	BLACK.	WHITE.	TOTAL.
FEAR . . .	85	250	53	25	22	65	57	557
RAGE . . .	356	71	56	9	17	33	10	552
DANGER . . .	50	235	80	17	39	65	43	529
LOVE . . .	204	33	26	89	25	14	64	455
ANXIETY . . .	28	286	77	31	53	61	53	589
REST . . .	182	24	51	112	72	22	78	541
SORROW . . .	67	243	72	26	44	68	63	583
SAFETY . . .	87	26	60	94	72	24	83	446
SELF-CONFIDENCE .	74	24	56	90	81	44	75	444
HATE . . .	34	30	85	45	81	193	33	501
LONGEVITY . . .	17	77	57	65	97	80	73	466
HEALTH . . .	219	28	27	96	44	29	73	516
SICKNESS . . .	20	245	75	41	70	88	72	611
STRENGTH . . .	315	10	15	67	39	22	57	525
WEAKNESS . . .	12	236	64	36	67	61	115	591
	1750	1818	854	843	823	869	949	7906

		Per Cent.	English boys.	Percentage with		
				1st.	2nd.	3rd.
Rage	RED	65	(79)	14	1	0
	YELLOW	13	(4)	1	9	5
	BLUE	10	(3)	1	5	7
	[BLACK]	6	(8)]	0	0	0
Strength	RED	60	(14)	14	0	1
	GREEN	13	(13)	1	6	4
	WHITE	11	(13)	1	5	4
	[BROWN]	7	(29)]	0	0	0
	[BLUE]	3	(17)]	0	0	0
Anxiety	YELLOW	49	(18)	15	1	0
	BLUE	13	(18)	2	7	0
	BLACK	10	(11)	2	4	2
	[GREEN]	5	(16)]	0	0	0
	[BROWN]	9	(14)]	0	0	0
	[WHITE]	9	(11)]	0	0	0
Love	RED	45	(7)	12	3	1
	GREEN	20	(10)	3	8	2
	WHITE	14	(27)	2	5	5
	[YELLOW]	7	(26)]	0	0	0
	[BLUE]	6	(22)]	0	0	0
Fear	YELLOW	45	(8)	12	3	1
	RED	15	(54)	3	3	3
	BLACK	12	(11)	0	7	2
	WHITE	10	(16)	0	4	3
Danger	YELLOW	44	(0)	13	2	1
	BLUE	15	(0)	2	5	6
	BLACK	12	(2)	0	4	1
	RED	9	(95)	1	3	3
	[WHITE]	8	(2)]	0	0	0
Health	RED	42	(17)	13	0	0
	GREEN	18	(13)	1	10	4
	WHITE	14	(15)	1	3	6
	[BROWN]	9	(25)]	0	0	0
	[BLUE]	5	(15)]	0	0	0
Sorrow	YELLOW	42	(15)	11	3	1
	BLUE	12	(14)	2	6	2
	BLACK	12	(44)	3	3	5
	RED	11	(5)	1	1	2
	[WHITE]	11	(11)]	0	0	0
Weakness	YELLOW	40	(19)	13	1	0
	WHITE	9	(44)	4	6	3
	BROWN	11	(5)	0	3	6
	[BLACK]	10	(12)]	0	0	0
Sickness	YELLOW	40	(27)	15	0	0
	BLACK	14	(14)	0	7	5
	BLUE	12	(8)	1	3	4
	WHITE	12	(38)	0	4	5

		Per Cent.	Percentage with English boys.	Percentage		
				1st.	2nd.	3rd.
Hate	BLACK	39	(26)	9	3	3
	BLUE	17	(12)	4	5	1
	BROWN	16	(8)	3	5	5
	[RED]	7	(33)]	0	0	0
Rest	RED	34	(2)	11	1	2
	GREEN	21	(19)	1	9	1
	WHITE	14	(17)	2	2	6
	BROWN	13	(12)	1	5	1
	[BLUE	9	(20)]	0	0	0
	[YELLOW	4	(22)]	0	0	0
Safety	GREEN	21	(60)	2	9	2
	RED	19	(4)	5	3	1
	WHITE	19	(8)	5	2	4
	[BLUE	13	(12)]	0	0	0
Loneliness	BROWN	21	(20)	5	4	1
	BLACK	17	(21)	3	4	4
	YELLOW	17	(21)	5	1	1
	WHITE	16	(13)	4	3	3
	[BLUE	12	(14)]	0	0	0
Self-confidence	GREEN	20	(18)	5	7	2
	BROWN	18	(15)	5	4	1
	WHITE	16	(8)	2	4	3
	RED	16	(6)	3	3	3
	[BLUE	13	(32)]	0	0	0
	[YELLOW	5	(17)]	0	0	0

(In this second table two points require note: (1) In assigning 1st, 2nd, and 3rd places in each class, I have considered 1st equal as 1st and so on; I am not certain that Mr. Slade has done this. (2) I have added for purposes of comparison (within round brackets) Mr. Slade's percentages with English boys and have included all the percentages in Mr. Slade's Table I. with my own for comparison.)

The following points arise out of the results:—

(1) We notice the relative infrequency of the associations of the 'currently accepted conventions' of our Western life—red with danger, green with safety, black with sorrow, although school-boys probably knew the symbolic use of red and green in a city where there have been railways for some forty years. If there is some other factor than "Conventional Association" in these cases, it does not seem to be operative in India.

(2) There seems to be a definite tendency to associate red and green with pleasant qualities, and yellow and blue with unpleasant qualities. My students, who were asked to comment on the results, definitely remark on this in the case of the pleasant qualities, for example, "The colour green is a pleasant colour like red". This tendency seems worth further investigation, as it might suggest a theory for the development of colour preferences.

(3) Many of the frequent associations seem to be of the bodily appearance associated with the quality in question—red with rage, health and strength, yellow with fear, danger, sickness and weakness. My students all lay great emphasis on this type of association, even finding it in cases

like red with love, where I should not have thought of it. That yellow is preferred to white as a mark of sickness or weakness is probably due to the fact that the complexions of Indians become yellow rather than white in illness. This type of association appears in many idioms in the languages of North India.

(4) The frequency of associations with yellow and red is partly, I believe, due to their position at the beginning of the list, where they attracted the attention of the less intelligent boys. But apart from this, these two colours seem to be far more interesting to the Indian boy than the others.

WILLIAM LILLIE.

### III. KONGRESS FÜR ASTHETIK UND ALLGEMEINE KUNSTWISSENSCHAFT.

Die von Prof. Max Dessoir geleitete Gesellschaft für Ästhetik und allgemeine Kunstwissenschaft beabsichtigt in der Pfingstwoche 1927 eine Tagung zu veranstalten. Die Tagung soll in Halle an der Saale stattfinden. Es hat sich ein Ortsausschuss gebildet, dessen Vorsitzender Prof. E. Utitz und dessen Schriftführer Prof. W. Liepe, Halle an der Saale, Ulestrasse 9, ist. An diesen sind alle Anfragen zu richten. Ausser einigen allgemeinen Vorträgen wird der Kongress vornehmlich eine nach allen Seiten ausgreifende Erörterung der beiden Probleme "Rhythmus" und "Symbol" bieten. Im Zusammenhang hiermit sind auch künstlerische Veranstaltungen vorgesehen.

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